CRESST REPORT 799

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EVALUATION OF GREEN DOT'S LOCKE TRANSFORMATION PROJECT: FINDINGS FROM THE 2007-08, 2008-09, AND 2009-10 SCHOOL YEARS

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The National Center for Research on Evaluation, Standards, and Student Testing

Graduate School of Education & Information Sciences
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EXECUTIVE SUMMARY

In the fall of 2007, Alain Leroy Locke High School, historically one of California's lowest performing secondary schools, began its transition into a set of smaller, Green Dot Charter High Schools. The effort represented the first time an outside organization was given the responsibility to operate a traditional district school. Green Dot's goals for the transformation effort were clear: to create high performing, urban schools where all young adults receive the education they need to be prepared for college, leadership, and life. With a grant from the Bill and Melinda Gates Foundation, the National Center for Research on Evaluation, Standards and Student Testing (CRESST), was charged with monitoring the progress and effects of Green Dot Public Schools' Locke transformation.

It is important to note that it is premature to expect clear evidence of impact. The Green Dot Locke (GDL) transformation began in fall 2007 with two small, off-site schools; the majority of Locke students were not included in the transition until fall 2008. Yet, since assuming responsibility for Alain Leroy Locke High School's student community, Green Dot Public Schools has made important strides in turning a struggling urban school into a set of small schools that support students' progress toward higher academic performance. Based on our statistical evaluation of various student outcomes—we assert that there are reasons to be optimistic with GDL's progress thus far.

Evaluation Questions

The following evaluation questions are addressed in the current report:

1. Over the past three years, what are the demographic and achievement characteristics of incoming freshman to Green Dot Public Schools' Locke transformation? How similar are these students to their middle school counterparts who attended other LAUSD high schools?
2. How are students in Green Dot Public Schools' Locke transformation performing in terms of school persistence, attendance, course-taking and completion, as well as achievement on standardized tests in English language arts (ELA) and mathematics?
3. Relative to their matched counterparts in LAUSD, how well are Green Dot Public Schools' Locke transformation students performing in terms of school persistence, attendance, course-taking and completion, as well as achievement on standardized tests in ELA and mathematics?

These questions address a central underlying issue—the effects of the Green Dot Locke transformation on students. The first question attempts to rule out student selection as the reason for any subsequent positive effects (e.g., GDL students may perform better because

they are demographically different and/or initially higher achieving than former Locke or comparison students). We tackle this first question by documenting the extent to which GDL students are similar to the prior Locke High School student population as well as students living in the same neighborhoods. Answers to Evaluation Questions 2 and 3 explore GDL effects by providing descriptive data about patterns of performance and by directly comparing GDL students with comparison students on a number of indicators.

Demographic and Achievement Characteristics of GDL Students

Based on descriptive analysis, we found that the demographic profiles for the past three incoming 9th grade GDL cohorts were similar. Current GDL students were very similar to Locke's demographic profile prior to the GDL transformation, as well as to comparison students from GDL feeder schools who attended three comparison high schools in the Los Angeles Unified School District (LAUSD). All three entering GDL freshman cohorts were almost entirely Latino or African American; they were likely participants of the National School Lunch Program (NSLP); and a large proportion of these students were classified as English learners (ELs).

8th grade California Standards Test (CST) scores for entering GDL students clearly demonstrate the academic challenge of the transformation. The majority of incoming GDL freshman in Cohorts 1, 2, and 3 scored below basic or far below basic on the mathematics and the English language arts (ELA) sections of the CST. Furthermore, GDL students performed similarly to students who attended the three comparison high schools.

Descriptive Patterns of Performance

Descriptive analyses showed promising trends in GDL students' persistence, school attendance, course-taking and completion, and standardized test scores. Results suggested increased retention rates across cohorts of GDL students. Analyses also revealed that relative to comparison high schools, there was an increase in GDL students' overall total enrollment in core courses and an increase in pass rates for some courses. Scores on the California High School Exit Exam (CAHSEE) have also continued to rise.

Effects of GDL on Student Performance

The results from matched samples of students suggest that 9th graders who entered GDL generally performed better on a range of student outcome measures than they would have if they had attended a comparable LAUSD high school. Positive GDL transformation effects were generally more prevalent for the second and third cohorts of students than for the first cohort. For example, compared to the matched non-GDL students, GDL students in

Cohort 2 were significantly more likely to stay in the same school over time, take and pass various 9th and 10th grade core courses, and score higher on the CAHSEE. Moreover, performance on CST scores was promising; virtually every descriptive comparison favored GDL students. Statistically significant differences were found for the most advanced GDL Cohort 2 students in the area of mathematics. These results are even more impressive given the increased persistence rates for GDL; presumably, GDL is retaining students who might have dropped out and were likely to be among the lowest performing students. In addition, given the pattern of increasing results for each cohort, broader results may well materialize for the new cohorts and as current students' progress through high school and on to graduation.

In conclusion, Green Dot Public School's transformation of Alain Leroy Locke High School is a complex story that is just beginning to unfold. Chapter 1 reveals the challenges that Green Dot faces, as well as evidence of success in addressing some of these issues. As GDL's story progresses, future chapters should solidify the evidence base and hold important lessons which can be shared with the field.

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EVALUATION OF GREEN DOT'S LOCKE TRANSFORMATION PROJECT: FINDINGS FROM THE 2007-08, 2008-09, AND 2009-10 SCHOOL YEARS

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Abstract

The current report looks at the effects of the Green Dot Locke (GDL) transformation on students over the past three years. Although the GDL transformation began in fall 2007 (with two small off-site schools), the majority of Locke students were not included in the transition until fall 2008. Comparing GDL students to a matched sample of students at Los Angeles Unified School District (LAUSD), using propensity score matching, results suggested that 9th graders who entered GDL generally performed better on a range of student outcome measures than they would have if they attended a comparable LAUSD high school. Positive GDL transformation effects were generally more prevalent for the second and third cohorts of students than for the first cohort.

Introduction

In 2007, community leaders and school staff came together with Green Dot Public Schools to request that Green Dot be given operational control of Alain Leroy Locke High School, historically one of the lowest performing secondary schools in the Los Angeles Unified School District (LAUSD), as well as in the state of California. With the LAUSD's Board of Education's approval, the so-called Locke Transformation Project marked the first time an outside organization was granted authority to operate an existing district school. The transition from a large, urban high school to a set of smaller, Green Dot Charter High Schools commenced in fall 2007 and was completed in fall 2008, with the opening of eight, small college preparatory academies committed to being high performing high schools where all young adults receive the education they need in order to be prepared for college, leadership, and life.

The challenge of accomplishing these goals is obvious when one considered the status of teaching and learning at Locke prior to the Green Dot Locke (GDL) transformation:

- In 2004-05, nearly 40% of Locke's teachers were under-credentialed
- 90% of Locke's students performed below basic or far below basic on the California Standards Tests (CST) in both mathematics and English language arts (ELA)
- 57% of students failed Algebra 1A

- Fewer than one-third of students passed the California High School Exit Exam (CAHSEE) required for high school graduation
- From 2004 to 2007, graduation rates ranged from 18% to 28%
- Rates of UC/CSU eligibility based on completion of A-G course requirements were as low as 2.5%
- No other high school in the county had consistently low Academic Performance Index (API) scores (see Figure 1)

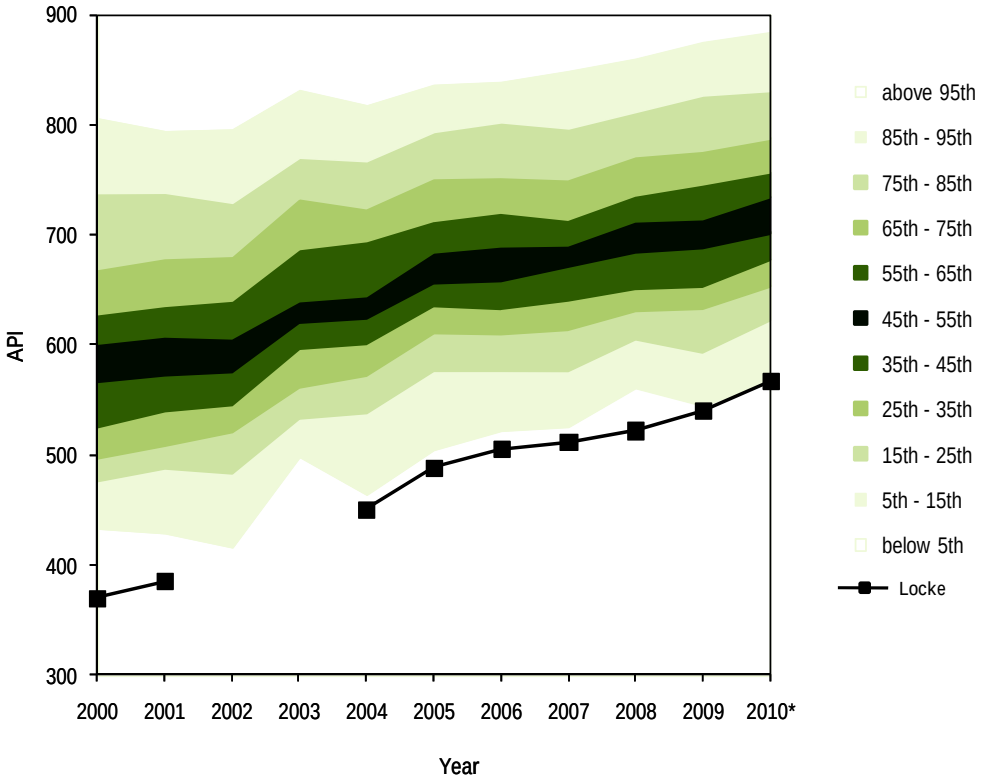

Figure 1. Distribution of API scores by percentile among Los Angeles County high schools, 2000-2010. Locke did not receive an API score in 2002 or 2003 because the proportion of students tested was below the minimum required by the state. The API score for Locke in 2008 to 2010 represents a weighted average of the API scores for all Green Dot Locke academies.
*API scores in 2010 are from the API growth file. All other API scores are from that year's base file.

With funding from the Bill and Melinda Gates Foundation, the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) was charged with monitoring the initial progress of the GDL transformation, which is the subject of the report that follows. In the remaining part of the introduction, we delineate Green Dot Public Schools' goals and its six basic tenets and summarize findings from a previous planning grant. After presenting our evaluation questions and methodology, we share results for each

question. In conclusion, we summarize major findings, cite possible limitations of our study, and propose a set of recommendations.

Green Dot Goals and Approach

Green Dot Public Schools proposed to use its prior success in creating small community high schools in Los Angeles (generally targeted at previously low performing students) in order to fuel a massive transformation at Locke. The effort was groundbreaking in many respects: Green Dot's alliance with LAUSD; the dramatic scale-up relative to Green Dot's prior small-school efforts (required to take over a large existing public high school and its entire catchment area); and the following ambitious mission:

- All Locke students will receive the education they deserve to be successful in college and life.
- Locke students will become true change agents and come back to transform South Los Angeles and Watts.
- Locke will become a successful urban public high school and will raise the bar for urban schools across the country.

Green Dot's model for accomplishing such ambitious goals is based on its six basic tenets of high performing schools (see Table 1). Green Dot emphasizes a strong partnership with diverse stakeholders—including parents, the community, and LAUSD—in order to implement its tenets. The six tenets represent core principles that all Green Dot schools must follow. There are also recommended practices, which are the organization's distillation of best practices that inform principals' and teachers' decision-making in fulfilling the tenets. The recommended practices are intended to help standardize superior educational methods in all curriculum and operational areas across Green Dot charter schools.

Table 1

Green Dot Public Schools' Six Basic Tenets

#	Tenet
1.	Small, safe, personalized schools
2.	High expectations for all students
3.	Local control with extensive professional development and accountability
4.	Parent participation
5.	Maximize funding to the classroom
6.	Keep schools open later

Summary of Findings from the Planning Grant

An earlier planning grant was initiated to establish a strong conceptual and technical foundation for a comprehensive, longitudinal study of the implementation and effects of the GDL transformation. The first stage of CRESST's mixed methods evaluation work provided important baseline information from which future progress may be judged and also presented a preliminary picture of GDL's initial accomplishments. The tenor of the qualitative findings was predominantly positive. Most staff reported large strides made, particularly in the way that they themselves had taken responsibility for student success. Staff also noted the emergence of a new culture of trust, community, and student engagement in the classroom. Yet, they also reported that various challenges remained—such as providing additional student support (academic, personal, emotional, etc.) and meeting certain needs of teachers (professional development, cross-campus coordination, parent engagement, etc.).

The preliminary quantitative results indicated higher total enrollment, which reflected the combined effects of fewer dropouts, less transfers out, and higher demand for admission at all grades. A greater number of students (as well as a higher percentage of students) took core academic courses, honors classes, and standardized tests. On the ELA section of the CST, basic proficiency rates were 11 and 16 percentage points higher (for 9th and 10th graders, respectively) in 2008-09 than in 2004-05. Moreover, against all odds for low performing schools in LA County, Locke met its API targets in 2009. Finally, although it would be premature to already expect Green Dot to affect the graduation rates and college readiness of its Locke graduates, the early signs were promising.

Evaluation Methodology

The current report extends the findings of the planning grant report to incorporate another year of student data. In this section, we describe the evaluation questions that guided our work, the available data, and approaches to analysis.

Evaluation Questions

The Locke transformation is unique in that it marks the first time Green Dot Public Schools has taken over an existing public school's entire attendance area. Because students who typically attend Green Dot or other charter schools have elected to do so, they represent only a portion of the students residing in a particular catchment area or neighborhood. This reality leaves open the possibility that any positive effects of charter school attendance are the result of self-selection. That is, students who choose to enroll in charter schools may be different than those who do not, particularly with regard to motivation; differences in student outcomes may be the result of a difference in student population rather than school effects.

While self-selection is not an obvious problem for GDL, it is still important to consider whether or not the student population profile has changed after the GDL transformation and to carefully examine how GDL demographic profiles and performance indicators compare to those prior to the transition and to similar students. These concerns give rise to three major evaluation questions:

1. Over the past three years, what are the demographic and achievement characteristics of incoming freshman to Green Dot Public Schools' Locke transformation? How similar are these students to their middle school counterparts who attended other LAUSD high schools?
2. How are students in Green Dot Public Schools' Locke transformation performing in terms of school persistence, attendance, course-taking and completion, as well as achievement on standardized tests in English language arts (ELA) and mathematics?
3. Relative to their matched counterparts in LAUSD, how well are Green Dot Public Schools' Locke transformation students performing in terms of school persistence, attendance, course-taking and completion, as well as achievement on standardized tests in ELA and mathematics?

Evaluation Question 1 examines how GDL students compare to the Locke enrollment prior to the transformation and neighborhood students attending comparison high schools in LAUSD. To examine this question, we looked at demographic and achievement characteristics of the freshmen classes entering Locke in the each of three cohorts, the initial year (2007-08)[1] and the following two years. We compared these students to prior Locke populations and to students in comparison schools. Evaluation Question 2 investigates how GDL students, in each of three cohorts, performed on a range of indicators over time. Evaluation Question 3 addresses the core of our research. We assess the effects of GDL by using a quasi-experimental design to examine how GDL students performed on a range of outcomes across three years compared to groups of carefully matched control students attending comparison high schools in LAUSD.

Available Data

Data available to the general public as well as student-level data (acquired from LAUSD and Green Dot) were used for the current report. Public data were retrieved from several California Department of Education (CDE) websites (e.g., DataQuest, CBEDS). Student-level data were requested and received from Green Dot and LAUSD (for local

[1] For 2007-08, GDL students were defined as those enrolled in the GDL academies. The students who were enrolled in the LAUSD-run Locke were not counted as Cohort 1 GDL students in our analysis.

school districts 5, 7, and 8) for 2006-07, 2007-08, 2008-09, and 2009-10. In addition to demographic data, student outcome data included:

- **School Persistence.** For a given school to have a significant influence on student achievement, it must be able to keep students enrolled in the same school. This was particularly true for populations of students with a history of high dropout rates and low graduation rates.
- **School Attendance.** While the analysis of school persistence examined whether students stayed enrolled in the same school over time, it was also important to examine the degree to which students attend school when enrolled.
- **Course-taking.** We are further interested in knowing what courses students are exposed to and whether they were succeeding in completing the courses needed to be college eligible.
- **Student Achievement.** In addition to the previous measures, we looked at students' performance on state standardized tests, (i.e., CST and CAHSEE) to investigate student learning.

Appendix A lists the variables we requested and received from GDL and LAUSD.

Analysis Strategies

Multiple analytic procedures were applied to the data to discern potential changes in student achievement outcomes and to answer the proposed evaluation questions. To address Evaluation Question 1, descriptive analyses of student characteristics were conducted for the three cohorts of freshmen at GDL and also for their counterparts in LAUSD. The three cohorts of students under analysis were:

- Cohort 1: Students who started as 9th graders in fall 2007, reflecting only a small proportion of the total Locke population at two off-site small schools,
- Cohort 2: Students who started as 9th graders in fall 2008, reflecting the entire Locke 9th grade population, and
- Cohort 3: Students who started as 9th graders in fall 2009.

For Evaluation Question 2 descriptive analyses of student outcome measures were conducted by grade level and academic year. In viewing these results, it is important to keep in mind the time of the measure relative to potential GDL dosage for students at different grade levels. For example, in spring 2009, the majority of GDL 10th graders would have been in their first year of exposure to the Green Dot transformation—as only a small proportion of 9th grade Locke students were in Cohort 1. Most students taking the CAHSEE exam did not have two years of GDL exposure until the 2009-10 academic year.

For Evaluation Question 3, a quasi-experimental design was used to examine the transformation effects on GDL students. To estimate how GDL students would have performed on the various outcome measures, in the absence of the GDL transformation, we matched GDL students to non-GDL students from the same neighborhoods with similar 8th grade characteristics and academic performance (i.e., similar students from neighboring LAUSD high schools serving the same feeder elementary schools as GDL). By matching students based on their 8th grade characteristics, we could rule out concerns that differences in outcomes between the matched GDL and control students were due to measured pre-existing differences between GDL and control students. As with most non-randomized designs, however, we could not fully rule out concerns that group differences were due to unobserved student characteristics (e.g., motivation) rather than the GDL transformation.

To maximize the number of cases available for analysis, the sample used for the quasi-experimental design differed depending on which outcome measure was being examined. For the student persistence outcome, students of interest were those enrolled in high school as 9th graders in the fall semester and whose 8th grade CST scores were available. For Cohort 1 students, for example, the analysis was based on students who were 9th graders in 2007-08. We then explored whether these freshmen students who started in 2007-08 remained with GDL schools in the following years, compared to the matched control group of students who enrolled in LAUSD schools. For other student outcome measures—namely attendance, course-taking and completion, as well as CST and CAHSEE performance—we defined the student population of interest as those who had 8th grade CST scores available; were enrolled as 9th graders in the subsequent fall; and had course-taking information for both the fall and spring semesters for the given year. For example, the year 3 achievement outcomes for Cohort 1 students were based on students for whom we had: (1) 8th grade CST data on both ELA and mathematics in 2006-07, (2) course-taking information for the fall and spring semesters of 2007-08, (3) course-taking information for the fall and spring semesters of 2008-09, and (4) CST data on both ELA and mathematics as well as course-taking information for the fall and spring semesters of 2009-10. There were three years of outcome data for Cohort 1 students, two years of outcome data for Cohort 2 students, and one year of outcome data for Cohort 3 students. Table 2 summarizes the cohort definitions for each of the cohorts and outcome types.

Table 2

Definition of Green Dot Locke Students for Analysis of Outcomes, by Cohort

	2006-07			2007-08			2008-09			2009-10		
	Course enrollment			Course enrollment			Course enrollment			Course enrollment		
Cohort outcomes	Fall	Spring	CST Score	Fall	Spring	CST Score	Fall	Spring	CST Score	Fall	Spring	CST Score
Cohort I												
Persistence			√*	√								
Year 1 outcomes			√*	√	√	√						
Year 2 outcomes			√*	√	√		√	√	√			
Year 3 outcomes			√*	√	√		√	√		√	√	√
Cohort 2												
Persistence						√*	√					
Year 1 outcomes						√*	√	√	√			
Year 2 outcomes						√*	√	√		√	√	√
Cohort 3												
Persistence									√*	√		
Year 1 outcomes									√*	√	√	√

Note. Year 1 Outcomes: ELA CST, Mathematics CST, School Attendance Rate, Passed Key Courses with C or above. Year 2 Outcomes: ELA CST, Mathematics CST, ELA CAHSEE, Mathematics CAHSEE, School Attendance Rate, Passed Key Courses with C or above. Year 3 Outcomes: ELA CST, Mathematics CST, School Attendance Rate, Passed Key Courses with C or above.
*The CST scores had to be from 8th grade and from a non-GDL school.

We used the same method to identify a pool of possible control students for matching who attended one of three comparison high schools: Fremont, Jordan, or Washington Preparatory. The three comparison high schools were identified as the LAUSD high schools that most students in the Locke feeder middle schools attended if they did not attend GDL. Students also had to meet the 8th grade and outcome data requirements discussed previously.[2] From this available pool of non-GDL students, control students were selected by

[2] Our initial pool of possible control students included those students enrolled in LAUSD's local school districts 5, 7, and 8 during their 8th grade year.

matching a number of demographic and academic performance measures. A nearest-neighbor propensity score method was implemented via the MatchIt package for R (Ho, Imai, King, & Stuart, 2009). Separate matches were made for the various cohorts and student outcome measures. We identified a total of nine groups of control students by cohort, year, and student outcome measures.

As outlined in Table 2, there are four groups for Cohort 1 (2008-2010 school persistence; 2008 end-of-year outcomes; 2009 end-of-year outcomes; and 2010 end-of-year outcomes). Three groups are included in Cohort 2 (2009 and 2010 school persistence; 2009 end-of-year outcomes; and 2010 end-of-year outcomes). Lastly, there were two groups in Cohort 3 (2010 school persistence and 2010 end-of-year outcomes). We re-matched at each time point to make sure we compared similar students at each period to maximize the compatibility of students.

In order to construct a comparison group with characteristics similar to the GDL cohorts, students in each cohort were matched exactly on gender; ethnicity; parents' education; poverty status; language classification; 8th grade CST mathematics subtest taken; and whether or not they attended a GDL feeder middle school. Feeder middle schools were defined as schools having at least five students in the first GDL 9th grade cohort and at least ten students in the second and third cohorts. The following six middle schools were identified as Locke feeder middle schools: Bethune, Clay, Drew, Gompers, Harte, and Markham. Within each exact match, a control student was identified for each treatment student based on nearest-neighbor propensity score matching (where the estimated propensity score was determined by the student's 8th grade CST scale scores for ELA and mathematics as well as the student's 8th grade attendance rate).

The matching process produced treatment (i.e., GDL students) and control (i.e., non-GDL students) groups with identical student characteristic profiles and nearly identical average 8th grade CST and attendance records. In order to provide an example, the student characteristics for Cohort 2 are presented in Table 3 (similar tables for Cohort 1 and Cohort 3 are included in Appendix C). The characteristics profiles were separated by matching cohort (i.e., persistence, year 1 outcomes, or year 2 outcomes) and group (i.e., GDL or non-GDL). Therefore, there were three sets of matching data. The first was the school persistence measure (565 GDL students); the second was the analysis of year 1 outcomes in 9th grade (489 GDL students); lastly, there was additional matching data for the analysis of year 2 outcomes in 10th grade (393 GDL students).

The persistence cohort had 565 of the 633 treatment students matched to 565 control students. Note that 91% of the matched students came from one of the Locke feeder middle schools, which suggested we were comparing students who came from similar middle schools with similar characteristics. The matched groups both had average 8th grade CST ELA scale scores of 294. The average CST math scale scores only differed by three to five scale score points, depending on the specific mathematics test taken in 8th grade. The same proportion of the matched GDL and control students took the Algebra 1 CST (49%) and the General Mathematics CST (51%) in 8th grade.

It should be noted that while matching among only those students who remain at their schools helps to reduce bias in the estimated treatment effects on the outcomes other than persistence, the strategy may introduce other biases. If GDL students persist longer in school than comparison students and if lower performing students are least likely to persist, then this means that the GDL group is likely to include more relatively low performing students than the comparison group—and can thus be disadvantaged. Appendix B explores alternative approaches to addressing this concern but results are very similar to those reported in the body of this report.

Table 3

Comparison of Matched Non-Green Dot Locke and Green Dot Locke Students by 8th Grade Characteristics

	Persistence		Year 1 outcomes		Year 2 outcomes	
8th grade characteristics	Non-GDL	GDL	Non-GDL	GDL	Non-GDL	GDL
Number of students in cohort	-	633	-	570	-	460
Number of matched students	565	565	489	489	393	393
% from feeder middle school	91	91	91	91	92	92
% of females	52	52	52	52	50	50
Race/ethnicity (%):						
Black / Afr. Am.	26	26	24	24	20	20
Latino / Hispanic	74	74	76	76	80	80
Parent's education (%):						
High school graduate	26	26	28	28	28	28
Less than high school	30	30	29	29	32	32
Unknown	44	44	43	43	40	40
% students on Nat'l School Lunch Program	88	88	88	88	89	89

8th grade characteristics	Persistence		Year 1 outcomes		Year 2 outcomes	
	Non-GDL	GDL	Non-GDL	GDL	Non-GDL	GDL
Language classification (%):						
English only or IFEP	32	32	29	29	25	25
RFEP	33	33	34	34	37	37
English learner	35	35	37	37	38	38
% students w/disabilities	8	8	8	8	7	7
Mean attendance rate	94	94	94	94	95	95
Mean CST ELA scale score	294	294	293	293	297	296
Took Algebra 1 CST:						
% that took test	49	49	51	51	53	53
Mean scale score	279	282	281	284	283	286
Took General Mathematics CST						
% that took test	51	51	49	49	47	47
Mean scale score	270	275	273	270	275	273

Tables C1 and C2 (in Appendix C) report the student characteristics and student 8th grade test scores for Cohorts 1 and 3. The results found for Cohort 2 were applicable to students in Cohorts 1 and 3. Thus, matched GDL and control students were similar demographically and academically prior to entering high school. The CST scale score differences between these two groups of students ranged from no difference to a difference of eight scale score points.

Analysis Results

Results below are organized and presented by each evaluation question:

Evaluation Question 1

Over the past three years, what are the demographic and achievement characteristics of entering freshman to Green Dot Public Schools' Locke transformation? How similar are these students to their middle school counterparts who attended other LAUSD high schools?

Demographic Characteristics

For each cohort of freshmen, student demographic characteristics as well as achievement data were compared for:

- All entering GDL freshmen,
- entering GDL freshmen who attended a GDL feeder middle school,
- entering freshman at one of three comparison schools who attended a GDL feeder middle school, and
- entering freshman at any other LAUSD high school who attended a GDL feeder middle school.

As discussed earlier in the data and methodology section, feeder middle schools are the six schools that the majority of GDL students attended in their 8th grade year. Comparison high schools (Fremont, Jordan, and Washington Preparatory) are the top three high schools attended by students from the feeder middle schools. We considered these three comparison schools as the schools GDL students would have most likely attended if they had not attended GDL.

Tables with complete student characteristics for each cohort can be found in Appendix D. While the tables show comparisons across all four groups, the primary comparison is between GDL students and students at the comparison schools who attended the same feeder middle schools. As shown in these tables, GDL students who attended the feeder middle schools had demographic characteristics similar to comparison school students who also attended the same feeder middle schools. For example, in all three cohorts of GDL and comparison schools, African American and Latino students comprised 99% to 100% of the student body. Moreover, special education students represented 7% to 10% of the GDL and comparison school students.

Differences between these two groups of students were noted for Cohort 3 students (i.e., National School Lunch Program participation and English learner status). Specifically, the GDL cohort had 10% more participation in the National School Lunch (NSLP) than the comparison group cohorts. In prior cohorts, the difference was in the range of 1% to 3%. This may indicate that GDL served lower income students or that GDL was more effective in having families fill out the paperwork necessary to qualify (among other reasons). The second difference was that GDL students had 10% fewer EL students. The breakdown indicated that this was not due to the reclassification of more students as English Proficient (RFEP) but instead represented a higher proportion of enrollment for students classified as English Only (EO). Results show that GDL feeder school students who went on to attend GDL or one of the three comparison high schools were more like each other than those who went on to attend other LAUSD high schools. Please see Tables D1 to D3 for a more complete breakdown of student characteristic variables by cohort and group status.

Student Achievement

Also included in Appendix D are tables detailing the 8th grade CST results for all three cohorts. The variables included are: type of test taken; number of students tested; average scale score; and the percentage of students scoring basic, proficient, or advanced proficiency. This breakdown was for all GDL freshmen (i.e., students who attended GDL feeder middle schools and then attended GDL) as well as for students who attended comparison high schools and other LAUSD high schools.

Analysis of the CST ELA and mathematics scores demonstrated that GDL students and comparison high school students from the same feeder middle schools were similar based on their 8th grade CST results. In all three cohorts, a low percentage of students scored basic, proficient, or advanced on the Algebra 1 or General Mathematics CST. Both groups performed better on the ELA exam than on the mathematics test; however, the percentage of students achieving basic, proficient, or advanced levels of proficiency on the ELA section was still very low. As with the demographic variables, the 8th grade CST test scores for GDL students and comparison school students were more alike than students who attended other LAUSD high schools. Students who attended other LAUSD high schools came into the 9th grade with higher 8th grade mathematics and ELA scores (see Appendix D, Tables D4 to D6 for a breakdown of CST scale scores and the percentage of students that scored basic, proficient, or advanced by cohort).

In sum, the demographic profiles for each entering 9th grade GDL cohort were similar. The descriptive demographic results demonstrated that students attending GDL were almost entirely Latino or Africa American; were likely participants of the NSLP; and a significant portion of GDL students were classified as ELs. 8th grade CST scores for GDL students in Cohorts 1, 2, and 3 were low—with the majority of students scoring below basic and far below basic on the mathematics and ELA CSTs. Overall, of the freshmen students who attended feeder middle schools, GDL students had characteristics and CST scores more similar to students who attended the comparison high schools than students from other LAUSD high schools.

Evaluation Question 2

How are students in the Green Dot Public Schools' Locke transformation performing in terms of school persistence, attendance, course-taking and completion, as well as achievement on standardized tests of English-language arts and mathematics?

Evaluation Question 2 sought to provide general trends of how GDL students (based on students with available data) performed in terms of school persistence, attendance, in their

course enrollment and completion, as well as on standardized tests over time across the three cohorts.

School Enrollment

While enrollment at comparison schools dropped, the total enrollment at GDL gradually rose. In fact 2,782 students were enrolled at Locke (including GDL and LAUSD sites) in 2007-08; in 2009-10 there were 3,138 students at GDL (see Figure 2).

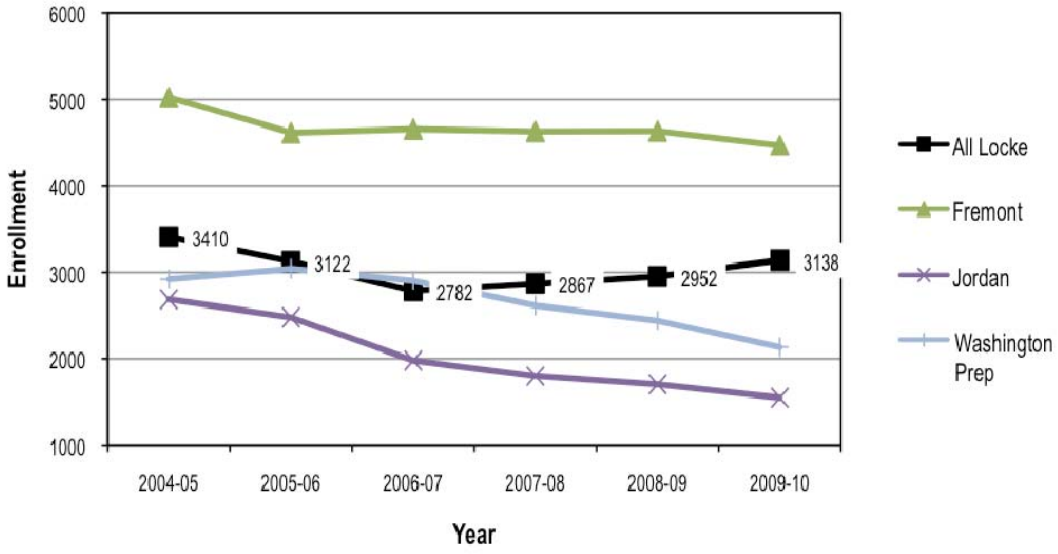

Figure 2. Total enrollment at Green Dot Locke, Fremont, Jordan, and Washington Preparatory (Source: CDE DataQuest).

Figure 3 displays total enrollment at Locke by grade level. As shown, the number of incoming 9th grade students decreased substantially in recent years, while the number of 11th and 12th graders rose to a level that compensated for the smaller incoming classes. The enrollment numbers stayed fairly consistent after 9th grade. This could reflect the combined results of higher demand for admission at all grade levels and fewer students leaving GDL.

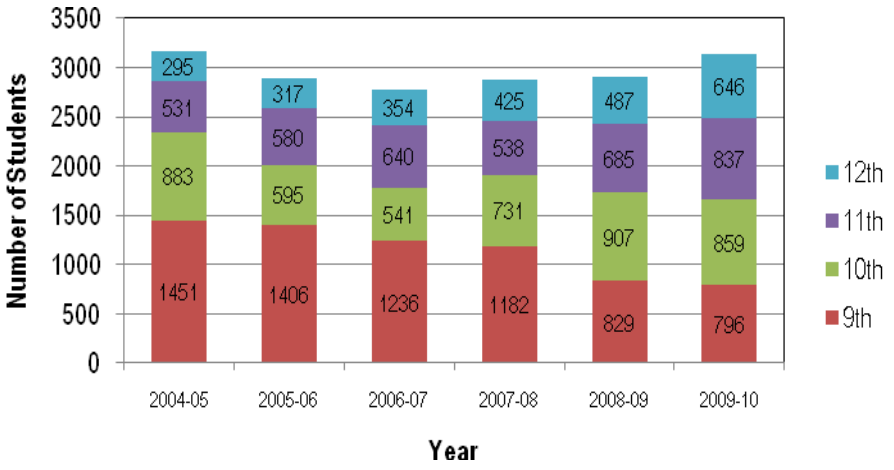

Figure 3. Green Dot Locke enrollment by grade level (Source: CDE DataQuest).

School Persistence

Using course enrollment data, Figures 4 and 5 display trends for individual student persistence over time for GDL and comparison students. Cohort 1 included the 2007-08, 2008-09, 2009-10 school years; Cohort 2 included the 2008-09, 2009-10 school years; and Cohort 3 included the 2009-10 school year. The comparisons show persistence data by class year (i.e., freshman, sophomore, and junior year). Note that for non-color versions of this document, freshman year rates were virtually identical for Cohorts 2 and 3 for both GDL and comparison students.

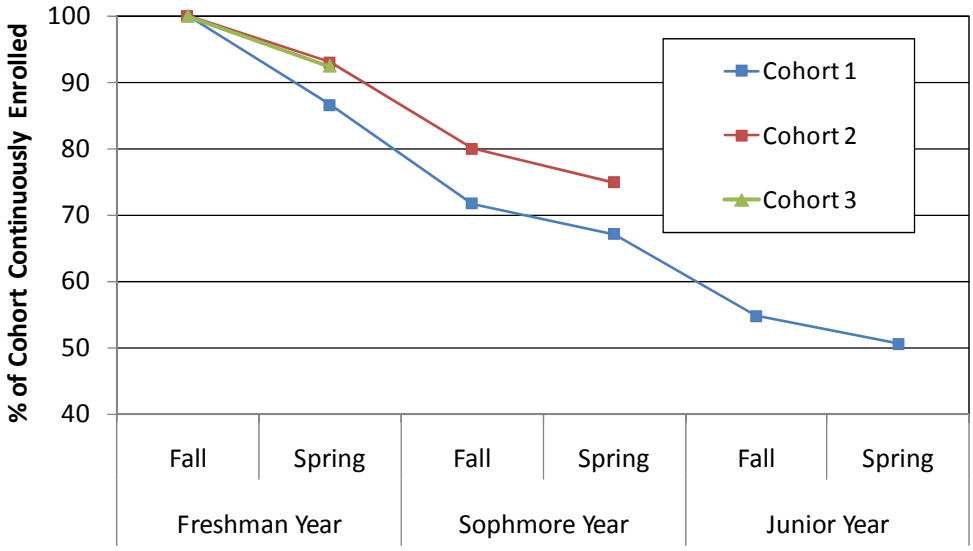

Figure 4. Green Dot Locke's persistence based on course-taking for Cohorts 1, 2, and 3 (Source: Green Dot data files).

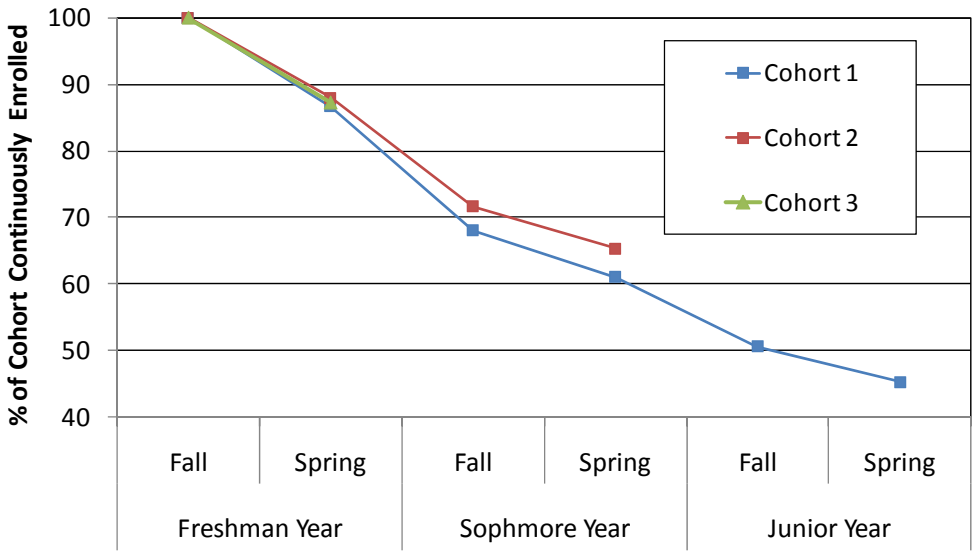

Figure 5. LAUSD comparison schools' average persistence based on course-taking for Cohorts 1, 2, and 3 (Source: LAUSD data files for Fremont, Jordan, and Washington Preparatory High Schools).

Figure 4 shows that longitudinal retention among GDL Cohorts 2 and 3 was higher than that of Cohort 1. By the end of their sophomore year, GDL students in Cohort 2 had an eight percentage-point higher persistence rate (from 67% of the original Cohort 1 to 75% of the original Cohort 2)—meaning more students continuously attended GDL from their freshman year to the end of their sophomore year. Within the limited amount of time Cohort 3 had attended high school, the data showed that the Cohort 3 freshman class was following in the steps of Cohort 2—92% of GDL freshmen were enrolled throughout the year as opposed to only 87% of comparison school freshmen.

Figure 5 shows the average persistence for the same cohorts from the comparison schools. The comparison schools had a slight increase in the average persistence rate from Cohort 1 to Cohort 2. By comparing Figures 4 and 5, we observed that GDL retained more students than the comparison high schools. GDL's Cohort 1 persistence rate was six percentage points higher than the comparison high schools' persistence rates. For Cohort 2, GDL had a 10 percentage-point increase over the comparison high schools' persistence rates (75% continuously attended GDL compared to 65% at the comparison schools).

Although the GDL persistence rate has increased in relation to prior years (see Figure 4) and in relation to the comparison schools (see Figures 4 and 5), it must still be noted that large numbers of students left school, both GDL and LAUSD, before starting their sophomore year. While some of these students may have gone to attend other schools, it is possible that many of them dropped out.

School Attendance

School attendance rates were computed by averaging the sum of total days attended for each student by the sum of total possible attendance days. Table 4 displays the attendance rate for GDL students by grade level over the past three years, along with the parallel information for the three control schools. Overall, the attendance rates for GDL students remained consistent at around 90%, from 2008-09 to 2009-10, for all students except 12th graders (whose rates were lower). Compared to the attendance rates for GDL students in the same period, the attendance rates at the three control schools were generally similar. For instance, students at Fremont and Washington Prep had slightly higher attendance rates and those at Jordan maintained slightly lower attendance rates.

Table 4

Attendance Rate (%) by Grade Level for 2007-08, 2008-09, and 2009-10

School	9th	10th	11th	12th
Green Dot Locke				
2009-10	91	91	88	83
2008-09	90	90	88	86
2007-08*	93			
Fremont				
2009-10	91	93	93	94
2008-09	92	92	94	91
2007-08	89			
Jordan				
2009-10	89	88	88	83
2008-09	86	90	86	84
2007-08	88			
Washington Prep				
2009-10	91	93	93	93
2008-09	88	90	88	89
2007-08	84			

*Note.**2007-08 attendance data was only available for a subgroup of 9th grade students that were enrolled in GDL academies (Source: Green Dot and LAUSD data files for Fremont, Jordan, and Washington Preparatory High Schools).

Course-taking and Completion

Course-taking data were available for students who were enrolled at the GDL schools in the fall and spring semesters of the 2007-08, 2008-09, and 2009-10 academic years. For the sake of consistency, when analyzing and comparing the student population across the years, the 2007-08 school year is not included because it only contained 9th graders. Four subject areas, (i.e., English, mathematics, science, and social science) were used to describe students' course-taking and completion because they correspond to California's UC/CSU A-G subject requirements. Within each subject area, three to four key courses were identified to represent the subject area because successful completion of these key courses would better prepare students to meet the A-G subject requirements. Note that in order to be flagged as "passing" a course, a letter grade of "C" or better must have been received.

English

We identified four core English courses (English 9, English 10, English 11, and English 12) per semester. The pass rate for 9th grade English 9 (A/B)—which in the past had been one of the first major bottlenecks on the path to college-eligibility—showed an overall increase from 2008-09 to 2009-10. From fall 2008 to fall 2009, the English (9A) pass rate increased by 8 percentage points (see Table 5). Similarly, the English (9B) pass rate increased by about 15 percentage points from spring 2009 to spring 2010. Increased pass rates were also observed for English 11B and 12A but results were not as positive for English 10A and B. (see Tables 5 and 6).

Table 5

Green Dot Locke Students' Enrollment and Completion of English Courses (Fall 2008 and 2009)

		Fall 2009					Fall 2008				
Course name	Students	9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
English 9A	No. enrolled	713	13	4	2	732	654	9	8	6	677
	Passed (≥ C)	463	9	3	1	476	368	8	7	5	388
	Pass rate %)	65	69	75	50	65	56	89	88	83	57
English 10A	No. enrolled	8	653	66	46	773	1	576	39	13	629
	Passed (≥ C)	3	385	25	24	437	1	375	15	8	399
	Pass rate (%)	38	59	38	52	57	100	65	38	62	63

Course name	Students	Fall 2009					Fall 2008				
		9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
English 11A	No. enrolled	.	5	540	63	608	.	.	312	31	343
	Passed (≥ C)	.	1	304	34	339	.	.	173	16	189
	Pass rate (%)	.	20	56	54	56	.	.	55	52	55
English 12A	No. enrolled	.	.	3	355	358	.	.	5	289	294
	Passed (≥ C)	.	.	0	188	188	.	.	1	144	145
	Pass rate (%)	.	.	0	53	53	.	.	20	50	49
Total core ELA enrollment		721	671	613	466	2471	655	585	364	339	1943
Total grade enrollment*		802	849	777	469	2897	829	907	685	487	2908
% enrollment in core courses		90	79	79	99	85	79	64	53	70	67

Note.*Total grade enrollment is based on course-taking data.

Table 6

Green Dot Locke Students' Enrollment and Completion of English Courses (Spring 2009 and 2010)

Course name	Students	Spring 2010					Spring 2009				
		9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
English 9B	No. enrolled	731	21	10	2	764	696	6	3	2	707
	Passed (≥ C)	505	7	5	0	517	369	2	2	2	375
	Pass rate (%)	69	33	50	0	68	53	33	67	100	53
English 10B	No. enrolled	6	582	65	34	687	2	397	28	15	442
	Passed (≥ C)	1	354	23	13	391	1	249	9	10	269
	Pass rate (%)	17	61	35	38	57	50	63	32	67	61
English 11B	No. enrolled	.	2	515	55	572	.	.	178	40	218
	Passed (≥ C)	.	1	294	21	316	.	.	89	20	109
	Pass rate (%)	.	50	57	38	55	.	.	50	50	50
English 12B	No. enrolled	.	.	1	312	313	.	.	4	143	147
	Passed (≥ C)	.	.	0	175	175	.	.	1	78	79
	Pass rate (%)	.	.	0	56	56	.	.	25	55	54
Total core ELA enrollment		737	605	591	403	2336	698	403	213	200	1514
Total grade enrollment*		821	799	736	410	2766	878	605	292	223	1998
% enrollment in core courses		90	76	80	98	84	79	67	73	90	76

Note.*Total grade enrollment is based on course-taking data.

Furthermore, across all grades, total enrollment in core ELA courses (as a percentage of total grade enrollment) was substantially higher and more consistent in the 2009-10 academic year as compared to 2008-09. In 2009-10 the percentage of total enrollment in core ELA remained constant around 84% to 85% from fall to spring, while in 2008-09 the percentage of total enrollment in core ELA classes increased from 67% to 76% (from the fall to spring). It is important to note that although the percentage of total enrollment in core ELA courses substantially increased over the two years, in 2008-09, the total grade enrollment numbers substantially decreased—from 2,908 to 1,998—between the two semesters that same year.

Mathematics

The four core mathematics courses identified for each semester were Algebra 1, Algebra 2, Geometry, and Trigonometry/Pre-calculus. Overall, from 2008-2009 and 2009-2010, total enrollment numbers in core mathematics courses greatly and consistently increased across both fall and spring semesters. In 2009-10 in both the fall and spring semesters, generally 88% to 89% of the total grade enrollment took core mathematics courses. This was much higher compared to 2008-09—when 70% to 72% of the total grade enrollment was enrolled in core mathematics courses in the fall and spring. Interestingly, when focusing on 9th and 10th graders in 2009-10, at least 93% of the total grade enrollment was enrolled in core mathematics courses compared to 72% to 92% of 9th and 10th grade enrollment in the fall and spring of 2008-09. Although we observed this general pattern of percentage increase in core mathematics courses taken across all grades from 2008-09 to 2009-10, this pattern was particularly salient for 9th and 10th graders (see Tables 7 and 8).

Table 7

Green Dot Locke Students' Enrollment and Completion of Mathematics Courses (Fall 2008 and 2009)

		Fall 2009					Fall 2008				
Course name	Students	9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
Algebra 1A	No. enrolled	682	133	79	29	923	664	150	42	9	865
	Passed (≥ C)	393	47	26	9	475	309	66	17	5	397
	Pass rate (%)	58	35	33	31	51	47	44	40	56	46
Geometry A	No. enrolled	70	420	190	70	750	98	417	155	51	721
	Passed (≥C)	47	196	83	35	361	78	212	64	33	387
	Pass rate (%)	67	47	44	50	48	80	51	41	65	54

Course name	Students	Fall 2009					Fall 2008				
		9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
Algebra 2A	No. enrolled	14	249	363	119	745	.	82	173	88	343
	Passed (≥ C)	14	136	248	77	475	.	60	96	36	192
	Pass rate (%)	100	55	68	65	64	.	73	55	41	56
Trigonometry A/ Pre-Calculus A	No. enrolled	.	3	70	86	159	.	1	60	96	157
	Passed (≥ C)	.	2	57	60	119	.	1	47	63	111
	Pass rate (%)	.	67	81	70	75	.	100	78	66	71
Total core math enrollment		766	805	702	304	2577	762	650	430	244	2086
Total grade enrollment*		802	849	777	469	2897	829	907	685	487	2908
% enrollment in core courses		96	95	90	65	89	92	72	63	50	72

*Note.**Total grade enrollment is based on course-taking data.

Table 8

Green Dot Locke Students' Enrollment and Completion of Mathematics Courses (Spring 2009 and 2010)

Course name	Students	Spring 2010					Spring 2009				
		9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
Algebra 1B	No. enrolled	698	135	59	24	916	567	87	39	5	698
	Passed (≥ C)	371	49	18	14	452	268	40	15	1	324
	Pass rate (%)	53	36	31	58	49	47	46	38	20	46
Geometry B	No. enrolled	63	365	181	61	670	95	313	77	18	503
	Passed (≥C)	42	195	76	29	342	75	160	15	8	258
	Pass rate (%)	67	53	42	48	51	79	51	19	44	51
Algebra 2B	No. enrolled	15	240	338	107	700	.	37	73	32	142
	Passed (≥ C)	12	140	227	56	435	.	29	41	18	88
	Pass rate (%)	80	58	67	52	62	.	78	56	56	62
Trigonometry B/ Pre-calculus B	No. enrolled	.	6	75	69	150	.	.	23	34	57
	Passed (≥ C)	.	3	55	41	99	.	.	7	21	28
	Pass rate (%)	.	50	73	59	66	.	.	30	62	49
Total core math enrollment		776	746	653	261	2436	662	437	212	89	1400
Total grade enrollment*		821	799	736	410	2766	878	605	292	223	1998
% enrollment in core courses		95	93	89	64	88	75	72	73	40	70

*Note.**Total grade enrollment is based on course-taking data.

In addition, for Algebra 1 (A/B) course-taking in fall 2009, 58% of 9th graders enrolled in Algebra 1A passed the course with at least a "C"—nearly 10 percentage points higher than for the fall 2008. Subsequently in spring 2010, 53% of 9th graders enrolled in Algebra 1B passed the course with at least a "C"—nearly six percentage points higher than in spring 2009. The increase in pass rates is particularly noteworthy given that the rise in course enrollment may well mean the inclusion of relatively lower performing students.

Science

The three core science courses identified for each semester were biology, chemistry, and physics. When comparing fall 2008 to fall 2009, the percent of those enrolled in a core science course from the total grade enrollment increased by 15 percentage points. Subsequently, from spring 2009 to spring 2010, the overall percentage of students enrolled in core science increased by six percentage points. Interestingly, in the 2008-09 academic school year, the percent enrolled in core science increased by 22 percentage points between the fall and spring semesters; however, in the 2009-10 academic school year, percent enrollment in core science remained constant between fall and spring at 68% of total enrollment in core science courses. In terms of enrollment numbers in core science courses, in both the fall and spring of 2009-10, enrollment numbers substantially increased (see Tables 9 and 10) when compared to the previous year. However, these changes seemed to be coupled with decreases in pass rates— which would be expected if an increased number of relatively low performing students are now enrolled in core college-preparatory classes.

Table 9

Green Dot Locke Students' Enrollment and Completion of Science Courses (Fall 2008 and 2009)

		Fall 2009					Fall 2008				
Course name	Students	9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
Biology A	No. enrolled	486	70	68	28	652	803	92	38	12	945
	Passed (≥ C)	289	33	21	18	361	572	41	15	8	636
	Pass rate (%)	59	47	31	64	55	71	45	39	67	67
Chemistry A	No. enrolled	3	558	185	60	806	1	351	73	33	458
	Passed (≥ C)	0	331	108	40	479	0	181	50	22	253
	Pass rate (%)	0	59	58	67	59	0	52	68	67	55

		Fall 2009					Fall 2008				
Course name	Students	9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
Physics A	No. enrolled	120	6	309	76	511	.	.	68	45	113
	Passed (≥ C)	80	3	238	58	379	.	.	58	35	93
	Pass rate (%)	67	50	77	76	74	.	.	85	78	82
Total core science enrollment		609	634	562	164	1969	804	443	179	90	1516
Total grade enrollment*		802	849	777	469	2897	829	907	685	487	2908
% enrollment in core courses		76	75	72	35	68	97	49	26	18	52

*Note.**Total grade enrollment is based on course-taking data.

Table 10

Green Dot Locke Students' Enrollment and Completion of Science Courses (Spring 2009 and 2010)

		Spring 2010					Spring 2009				
Course name	Students	9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
Biology B	No. enrolled	488	77	65	19	649	807	96	40	9	952
	Passed (≥ C)	307	39	31	11	388	544	42	18	6	610
	Pass rate (%)	63	51	48	58	60	67	44	45	67	64
Chemistry B	No. enrolled	5	527	175	45	752	2	323	68	30	423
	Passed (≥ C)	0	320	105	30	455	1	232	49	19	301
	Pass rate (%)	0	61	60	67	61	50	72	72	63	71
Physics B	No. enrolled	114	6	293	59	472	.	.	64	37	101
	Passed (≥ C)	72	3	207	33	315	.	.	47	24	71
	Pass rate (%)	63	50	71	56	67	.	.	73	65	70
Total core science enrollment		607	610	533	123	1873	809	419	172	76	1476
Total grade enrollment*		821	799	736	410	2766	878	605	292	223	1998
% enrollment in core courses		74	76	72	30	68	92	69	59	34	74

*Note.**Total grade enrollment is based on course-taking data.

Social Science

The three core social science courses identified for each semester were World History, US History, and US Government. Overall, across two school years (2008-09 and 2009-10), the percentage of students enrolled in core social science courses increased 34% in the fall and 19% in the spring. Specifically, the increase was seen in the 2009-10 academic school year for the 10th to 12th grades. Essentially, more students were enrolled in core social

science courses than in the previous 2008-09 school year. In addition, more students took social science courses across both semesters in the 2009-10 school year than during the previous academic year. The pass rates for the core social science courses also increased from spring 2009 to spring 2010. The opposite pattern was found from fall 2008 to fall 2009, where pass rates decreased in core social science courses (see Tables 11 and 12). In addition, while pass rates seemed to decrease from fall 2008 to fall 2009, they increased from spring 2009 to spring 2010. Again, the relationship between enrollment rates and pass rates should be considered.

Table 11

Green Dot Locke Students' Enrollment and Completion of Social Science Courses (Fall 2008 and 2009)

		Fall 2009					Fall 2008				
Course name	Students	9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
World History A	No. enrolled	7	687	80	41	815	8	339	18	14	379
	Passed (≥ C)	2	472	52	29	555	8	251	9	11	279
	Pass rate (%)	29	69	65	71	68	100	74	50	79	74
US History	No. enrolled	.	15	532	41	588	.	3	210	24	237
	Passed (≥ C)	.	10	333	23	366	.	2	159	17	178
	Pass rate (%)	.	67	63	56	62	.	67	76	71	75
US Govt.	No. enrolled	.	.	7	359	366	.	.	5	169	174
	Passed (≥ C)	.	.	4	265	269	.	.	4	120	124
	Pass rate	.	.	57	74	73	.	.	80	71	71
Total core social studies enrollment		7	702	619	441	1769	8	342	233	207	790
Total grade enrollment*		802	849	777	469	2897	829	907	685	487	2908
% enrollment in core courses		1	83	80	94	61	1	38	34	43	27

Note.*Total grade enrollment is based on course-taking data.

Table 12

Green Dot Locke Students' Enrollment and Completion of Social Science Courses (Spring 2009 and 2010)

		Spring 2010					Spring 2009				
Course name	Students	9th	10th	11th	12th	Total	9th	10th	11th	12th	Total
World Hist. B	No. enrolled	7	646	73	29	755	10	376	20	14	420
	Passed (≥ C)	2	466	41	19	528	9	225	11	8	253
	Pass rate (%)	29	72	56	66	70	90	60	55	57	60
US History B	No. enrolled	.	13	505	40	558	.	6	195	32	233
	Passed (≥ C)	.	8	318	24	350	.	6	113	18	137
	Pass rate (%)	.	62	63	60	63	.	100	58	56	59
Economics	No. enrolled	.	.	5	338	343	.	.	7	150	157
	Passed (≥ C)	.	.	3	249	252	.	.	4	96	100
	Pass rate (%)	.	.	60	74	73	.	.	57	64	64
Total core social studies enrollment		7	659	583	407	1656	10	382	222	196	810
Total grade enrollment*		821	799	736	410	2766	878	605	292	223	1998
% enrollment in core courses		1	82	79	99	60	1	63	76	88	41

*Note.**Total grade enrollment is based on course-taking data.

Thus, for each key subject area there were noticeable increases in enrollment and pass rates, which provide preliminary evidence of student progress. In the subject area of English, total enrollment in the four identified courses substantially increased from the 2008-09 to 2009-10 academic year. For 9th graders, English 9 (A/B) pass rates also increased from the previous school year. In the subject area of mathematics, total enrollment for the four identified courses also substantially rose from the 2008-09 to 2009-10 academic year. 9th graders' pass rates increased from the previous school year in Algebra 1 (A/B). In the subject areas of science and social science, total enrollment for the key core courses also substantially increased from the 2008-09 to the 2009-10 academic years but patterns of pass rates were mixed.

Student Achievement

We have two measures of student achievement: performance on the California Standards Test (CST) and on the California High School Exit Exam (CAHSEE). It is important to note that the results reported here are descriptive and should be viewed with caution. The matched analysis presented in the next section for Evaluation Question 3 provides a better picture of the effects of GDL on student achievement.

California Standards Test

Table 13 (see below) reports the number of students tested and the percentage of those students that scored at the basic, proficient, and advanced levels. The table also provides the mean scale scores for 9th graders enrolled in GDL before, during, and after the GDL transformation. One can see a general trend of improvement in the percentage of students who scored basic and higher in both mathematics and ELA. Although the ELA scale scores did not increase in the past three years, mathematics scale scores increased from 277 in 2007-08 to 289 in 2009-10. The cleanest comparison, before and after the transformation, may be from the 2006-2007 school year because the 2008-09 CST scores are comprised of a combination of GDL and LAUSD students (i.e., Green Dot only assumed responsibility for two small off-campus schools). The 2007-08 scores show a clear upward trajectory.

Table 13

CST Scores for 9th grade Green Dot Locke Students, 2004-05 to 2009-10

	Mathematics			English language arts		
Year	Number tested	CST % adv-prof-basic	CST mean scale score	Number tested	CST % adv-prof-basic	CST mean scale score
2009-10	708	36	289	727	47	301
2008-09	811	21	276	847	47	302
2007-08*	813	23	277	843	46	301
2006-07	835	17	265	848	36	291
2005-06	933	17	269	962	28	281
2004-05	1065	10	260	1095	31	286

*Note.**2007-08 was the first year of GDL transformation. 263 of 1,182 9th grade students enrolled in LAUSD were in GDL academies, others were in LAUSD run sites (Source: CDE DataQuest).

The corresponding results for 10th graders are presented in Table 14. It should be noted that 10th graders were not part of GDL until 2008-09; it is at this point that a dramatic increase in the number of students tested is observed. The enrollment data displayed in the previous section demonstrates that a greater number of 10th grade students were enrolled in GDL than were enrolled in pre-GDL transformation—this provides an important context for interpreting achievement results (see Figure 2 for enrollment data). That is, it seems likely that the increase in enrollment involved relatively lower performing students. Even so, the results show substantial improvement in both mathematics and ELA scores as well as in the percentage of students scoring at basic and above (compared to pre-GDL levels). While there was a small decrease in the number of students who achieved basic and above in

mathematics and in the corresponding scale scores from 2008-09 to 2009-10, the latter scores still depict an overall improvement over pre-GDL transformation scores.

Table 14

CST Scores for 10th grade Green Dot Locke Students, 2004-05 to 2009-10

	Mathematics			English language arts		
Year	Number tested	CST % adv-prof-basic	CST mean scale score	Number tested	CST % adv-prof basic	CST mean scale score
2009-10	738	18	263	794	44	295
2008-09*	754	21	268	836	40	288
2007-08	564	12	256	618	38	292
2006-07	497	20	267	525	36	290
2005-06	494	8	255	620	32	287
2004-05	648	10	258	715	29	281

*Note.**2008-09 was the first year 10th grade students were enrolled in Green Dot Locke (Source: CDE DataQuest).

Table 15 displays the corresponding results for 11th graders. Again the data show a substantial increase in the number of students tested since 2008-09, which is the year GDL assumed responsibility for 11th graders. Results are mixed—with a small increase in the number of students who scored basic, proficient, or advanced in mathematics and a decrease in the number of students who scored basic, proficient, or advanced in ELA.

Table 15

CST Scores for 11th Grade Green Dot Locke Students, 2004-05 to 2009-10

	Mathematics			English language arts		
Year	Number tested	CST % adv-prof-basic	CST mean scale score	Number tested	CST % adv-prof-basic	CST mean scale score
2009-10	608	17	261	694	34	282
2008-09*	432	13	254	494	42	282
2007-08	301	12	257	360	63	287
2006-07	397	7	246	451	55	276
2005-06	377	13	255	505	53	276
2004-05	380	7	250	438	57	278

Note. *2008-09 was the first year 11th grade students were enrolled in Green Dot Locke (Source: CDE DataQuest).

California High School Exit Exam

An important indicator of student success in California is passing the CAHSEE in the 10th grade. Without doing so, students cannot be granted a high school diploma. Figures 6 and 7 show the CAHSEE pass rates for 10th grade students at Locke, comparison schools, LAUSD, LA County, and for the state of California. Pass rates and scale scores for 10th grade students that took the CAHSEE show an upward trend subsequent to 10th graders' participation in GDL in 2008-09. The 10th grade mathematics pass rates increased over 10% (from 44% to 54%) from 2007-08 to 2009-10. The 10th grade ELA pass rates rose 9% (from 46% to 55%) from 2007-08 to 2009-10.

The improvement trends in the mathematics and ELA CAHSEE scores at GDL were also observed for LAUSD, LA County, and the state of California. However, it is important to note a generally steeper incline for GDL after the transformation.

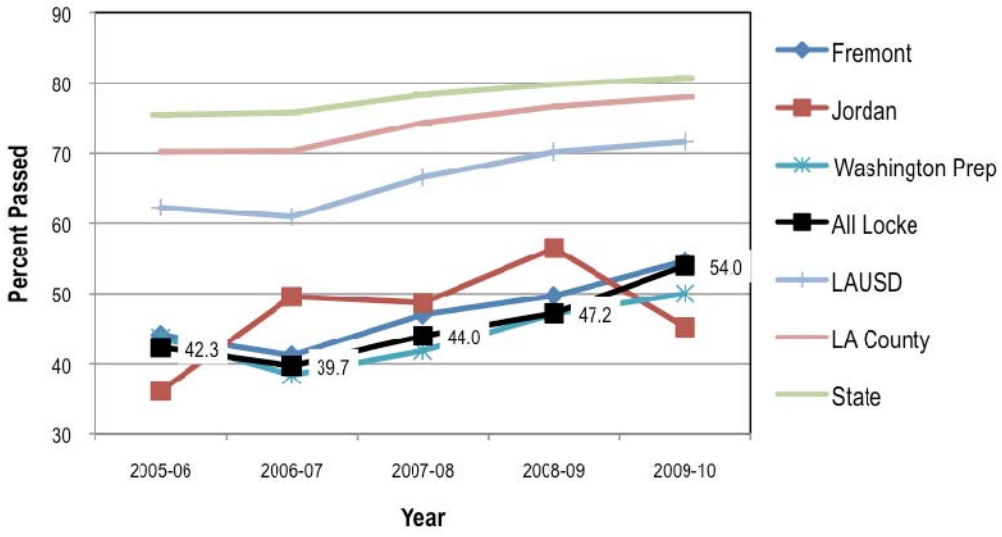

Figure 6. Tenth Grade CAHSEE- Mathematics Pass Rates (Source: CDE DataQuest).

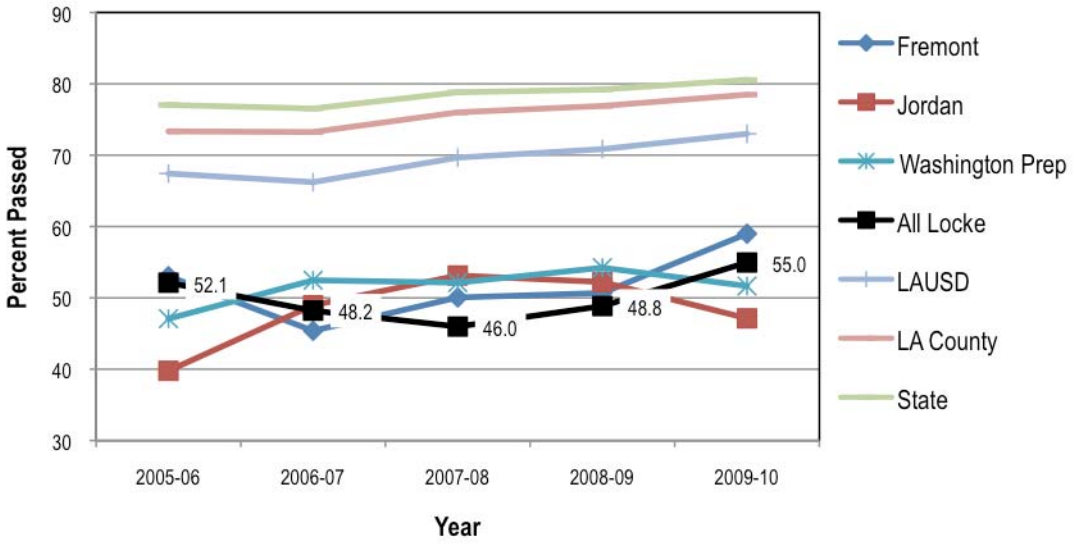

Figure 7. Tenth Grade CAHSEE- ELA Pass Rates (Source: CDE DataQuest).

In sum, Evaluation Question 2 descriptively explored the general patterns and trends of GDL students in terms of school persistence, school attendance, course-taking and completion, and standardized test scores. We found promising trends that point to increased retention rates across cohorts relative to comparison schools. Furthermore, GDL students' overall total enrollment in core courses increased over the years, CAHSEE and CST scores rose, and pass rates increased for particular courses. Higher pass rates and achievement scores are particularly noteworthy in light of the increased enrollment in college preparatory core courses and increased persistence rates. The following section will focus on the causal interpretation of these trends.

Evaluation Question 3

Relative to their matched counterparts in LAUSD, how well are Green Dot Public Schools' Locke transformation students performing in terms of school persistence, attendance, course-taking and completion, and achievement on standardized tests of English-language arts and mathematics?

Evaluation Question 3 addressed the core of our research: Compared to groups of comparable control students at LAUSD, how well did GDL students perform over the past three years? As noted in the methodology section, we used a quasi-experimental design based on matching GDL students to non-GDL students with similar 8th grade student characteristics and academic performance. To the extent that the student characteristics and performance measures used for matching captured the important differences between GDL and non-GDL students, one can interpret the effect estimates presented in this section as the

causal effect of the Green Dot transformation. It is possible that certain differences between the two groups of students were not captured in the matching process; hence, one should be cautious about making causal conclusions from the estimates presented in this section.

School Persistence

While we do not have the data necessary to identify school dropouts, we can identify students who remained at the same high school over time using the semester course-taking data. We followed each of the three cohorts from the end of the fall of their freshman year until the end of the spring of 2010 to identify students who remained at the same school each semester during this period.

Results from the school persistence analysis are presented in Table 16 by cohort and semester for the matched samples. The control group column reports the number of students in the control group cohort and the proportion of students in that cohort who were still enrolled in the same school in a given semester. The GDL group column reports the same statistics for the GDL students. The difference between the control group and GDL proportions are reported in the raw difference column with the *p*-value (statistical significance) in parentheses. The adjusted difference column reports the estimated difference and *p*-value for a student with an average CST 8th grade ELA scale score. The adjusted difference column provides our best estimate of the effect of the GDL transformation on persistence. These effect estimates are also summarized in Figure 8 with their approximate 95% confidence intervals. Estimates with a confidence interval that does not intersect with the zero line are considered statistically significant.

Table 16

Estimated Effect of Green Dot Locke on Proportion of Students Staying in Same School, by Semester (Matched Sample)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohort/semester	*N*	Mean	*N*	Mean	Est.	(*p*-value)	Est.	(*p*-value)
Cohort 1								
Year 1 fall	193	1.00	193	1.00	0.00		0.00	
Year 1 spring	193	0.92	193	0.88	-0.04	(0.173)	-0.04	(0.169)
Year 2 fall	193	0.80	193	0.75	-0.05	(0.274)	-0.05	(0.240)
Year 2 spring	193	0.72	193	0.72	-0.01	(0.910)	-0.01	(0.825)
Year 3 fall	193	0.62	193	0.59	-0.03	(0.533)	-0.04	(0.451)
Year 3 spring	193	0.58	193	0.55	-0.03	(0.609)	-0.03	(0.501)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohort/semester	*N*	Mean	*N*	Mean	Est.	(*p*-value)	Est.	(*p*-value)
Cohort 2								
Year 1 fall	565	1.00	565	1.00	0.00		0.00	
Year 1 spring	565	0.90	565	0.94	0.04	(0.012)	0.04	(0.012)
Year 2 fall	565	0.77	565	0.83	0.06	(0.015)	0.06	(0.015)
Year 2 spring	565	0.71	565	0.79	0.08	(0.003)	0.08	(0.003)
Cohort 3								
Year 1 fall	518	1.00	518	1.00	0.00		0.00	
Year 1 spring	518	0.91	518	0.95	0.04	(0.011)	0.04	(0.010)

Note. Results are for students in the matched sample for a given cohort.
*The adjusted difference controls for a student's 8th grade CST ELA scale score.

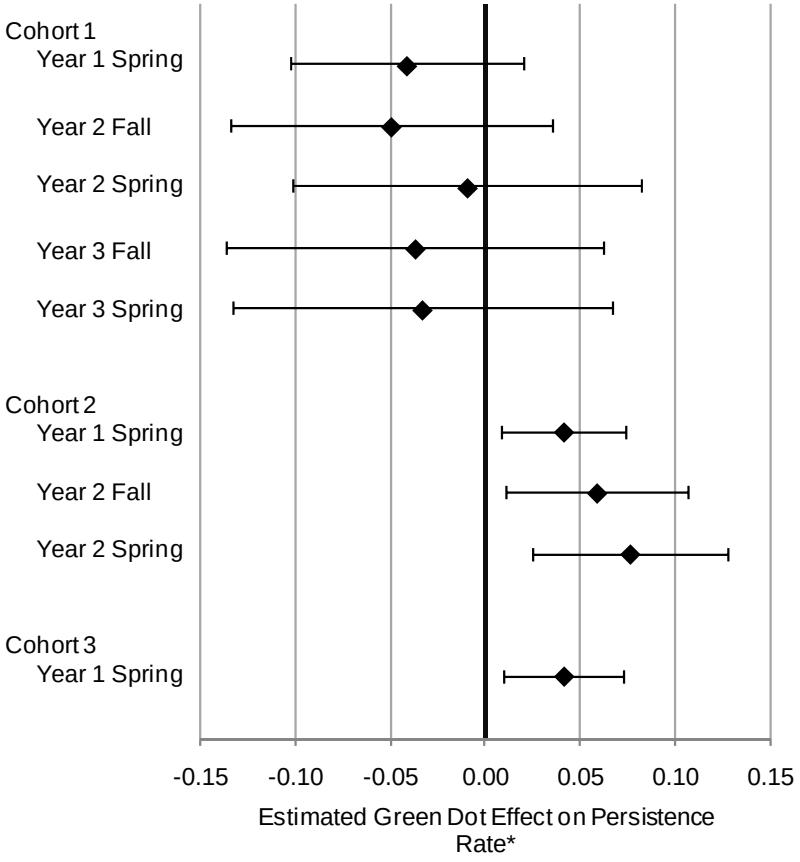

Figure 8. Summary of estimated Green Dot effects on proportion of students staying in same school, by cohort and semester (matched samples).
*Reported point estimates (diamonds) and approximate 95% confidence intervals (horizontal bars) are based on the regression adjusted effect estimates.

Overall, the results suggest that GDL did not have a statistically significant effect on school persistence for the first cohort but did have a positive effect for subsequent cohorts. For example, by the end of the spring semester of the second year, 72% of the Cohort 1 students in both the control and GDL groups were still at the same school. For Cohort 2, 71% of the control students were still at the same school and 79% of the GDL students were still at GDL. The persistence trend for Cohort 1 and Cohort 2 is displayed in Figure 9. While it is too early to draw in-depth conclusions from Cohort 3, the persistence trend in the first year suggests that Cohort 3 is following a path that is similar to Cohort 2.

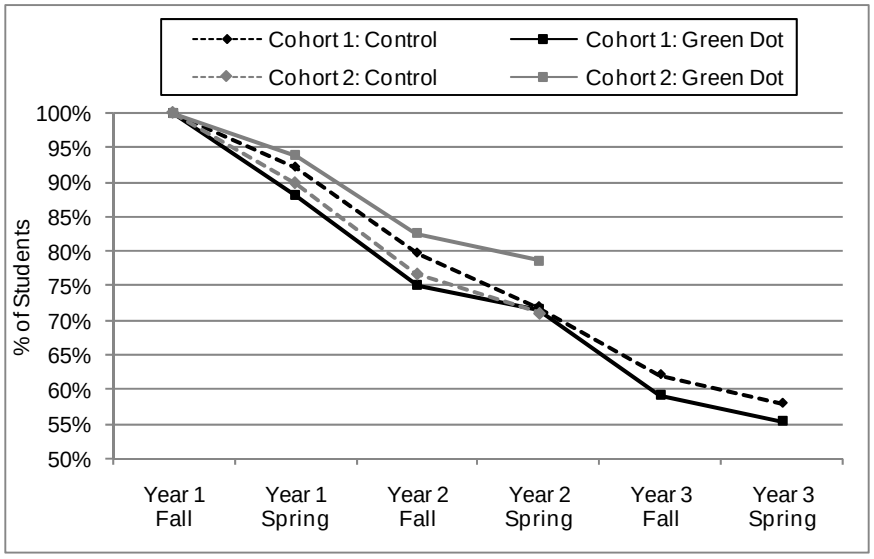

Figure 9. Percentage of students staying in the same school, by cohort and semester (matched sample).

School Attendance

To examine the degree to which students attend school when enrolled, we looked at student school attendance rates at three different points: end of year 1, end of year 2, and end of year 3. The analysis compared GDL students who were enrolled in all semesters up to and including the end-time point with the matched control students who were enrolled in all semesters up to and including the end-time point. For instance, we matched 121 Cohort 1 GDL students who were present during the end of fall and end of spring for years 1 and 2, to 121 Cohort 1 control students who were also present in the end of fall and end of spring for years 1 and 2. This comparison allowed us to examine attendance rates for students who were enrolled for the same number of semesters during high school and had similar 8th grade characteristics.

Results from the school attendance analysis are presented in Table 17 by cohort and semester for the matched samples. The table columns are set up in the same way as the columns in Table 16. The number of students in the matched control and GDL groups should be the same for a given cohort and year; however, missing data among the control group resulted in some minor reductions in the number of control students in the matched samples. Differences in the sample size were not large enough to warrant any concern.

Table 17

Estimated Effect of Green Dot Locke on School Attendance Rates (Matched Sample)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohort/year	*N*	Mean	*N*	Mean	Est.	(*p*-value)	Est.	(*p*-value)
Cohort 1: Year 1	165	0.93	165	0.93	0.00	(0.946)	0.00	(0.992)
Cohort 1: Year 2	121	0.94	121	0.93	-0.01	(0.249)	-0.01	(0.432)
Cohort 1: Year 3	93	0.93	94	0.95	0.02	(0.104)	0.02	(0.043)
Cohort 2: Year 1	489	0.92	489	0.92	0.00	(0.834)	0.00	(0.900)
Cohort 2: Year 2	386	0.93	393	0.93	0.00	(0.532)	0.00	(0.542)
Cohort 3: Year 1	451	0.94	465	0.94	0.00	(0.787)	0.00	(0.888)

Note. Results are for students in the matched sample for a given cohort and year.
* The adjusted difference controls for a student's 8th grade attendance rate and CST ELA scale score.

Overall, average student attendance rates were fairly stable across cohorts and years—on average, students attended about 92% to 95% of the days enrolled. For all three cohorts, attendance rates in years 1 and 2 did not differ between the GDL students and control students. The results for Cohort 1, however, suggest that GDL might have had a small positive impact on attendance in year 3. In the cohort's third year (11th grade for most students), the average attendance rate for GDL students was two percentage points higher than for the control students. When the attendance rate was conditional on the 8th grade CST ELA scale score, the difference was statistically significant at the 95th percentile level. Until similar year 3 results are available for Cohorts 2 and 3, it is difficult to determine whether this finding was an anomaly or an indication of a consistent GDL effect. The adjusted effect estimates are summarized in Figure 10 with their approximate 95% confidence intervals.

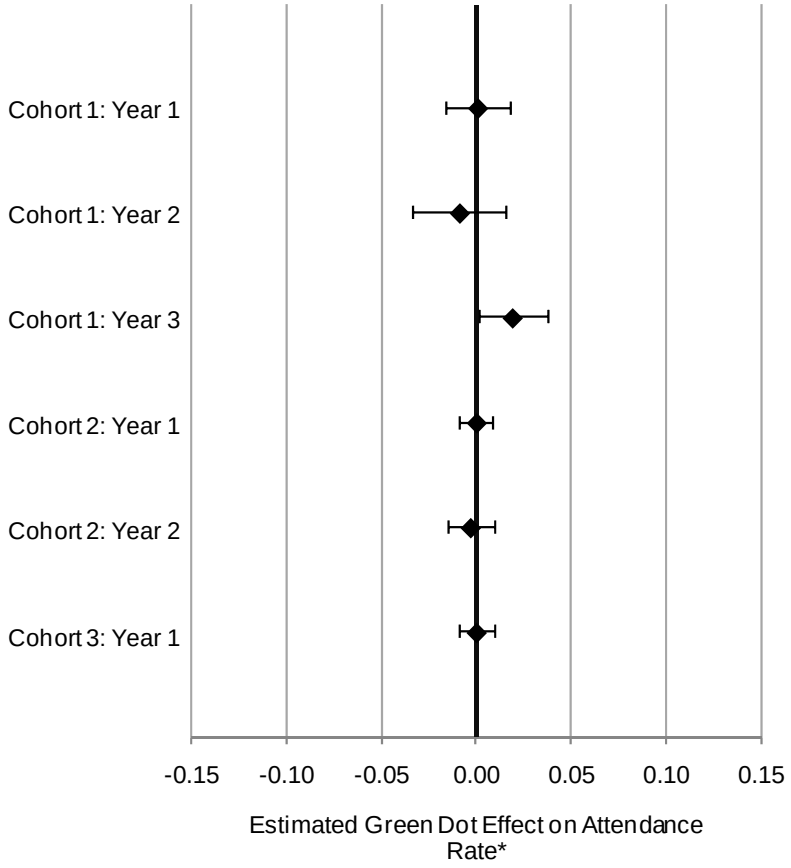

Figure 10. Summary of estimated Green Dot effects on school rates of attendance, by cohort and year (matched samples).
*Reported point estimates (diamonds) and approximate 95% confidence intervals (horizontal bars) are based on the regression adjusted effect estimates.

Course-taking and Completion

We relied on course-taking data from LAUSD and Green Dot to examine whether GDL had improved students' progression toward college eligibility. We focused on whether students had taken and passed some of the key courses within the English, mathematics, science, and social science subject areas. The following guidelines and definitions were used in our analysis:

- For two semester courses (e.g., English 9A and English 9B) we defined course-taking as having been enrolled in both semesters. We defined passing as completing both semesters with a C or better, which is the definition used for UC/CSU A-G eligibility.
- Both course-taking and passing were based on a cumulative definition, which meant students got credit for taking/passing a course in a given year if they took/passed the course during that year or in a previous year.
- Additionally, given that 8th grade course information was not available, if a student took a higher level course in 9th grade, we assumed the student had taken and

passed the lower level course in 8th grade. For instance, if a student took geometry in 9th grade, we coded the student as having taken both geometry and Algebra 1 by the end of 9th grade.

One should note, however, that this analysis did not include courses taken/passed during intersession or summer school because this information was not available from LAUSD. As a result, it is likely that our numbers underestimate the true course-taking and pass rates.

As with the analysis for school attendance, the course-taking analysis compared GDL students who were enrolled in all semesters up to and including the end-time point to the matched control students who were enrolled in all semesters up to and including the end-time point. This comparison allowed us to examine course-taking for students who were enrolled for the same number of semesters during high school and had similar 8th grade characteristics.

The results from the course-taking analysis are presented in Table 18 by cohort, year, and by course for the matched samples. For a given year, we only reported the courses a student should take (or have taken) by the end of the year to be on track to meet the UC/CSU A-G requirements. The table columns are set up in the same way as the columns in the previous tables. The number of students in the matched control and GDL groups should be the same for a given cohort, year, and test. Yet, some missing data caused unexpected differences in the number of students within a few comparisons. For example, for Cohort 1 in year 1, we only had course data for 124 of the 130 matched GDL students, while we had data for all 130 control students. The differences in sample size were small and were not likely to significantly alter the findings. In all cases, however, one should give more credence to the adjusted estimates because they adjusted for any residual group differences in 8th grade CST performance.

Overall, the course-taking results indicated that course-taking and passing for the GDL students was on par or better than the control students' course-taking and passing. Yet, effects of the GDL transformation were not consistent across cohorts, years, or tests. For Cohort 1, GDL students were less likely to take English 9 and Algebra 1 compared to the control group but the overall percentage of students who passed those courses did not differ significantly between the GDL and control groups. Furthermore, for years 2 and 3, a higher percentage of GDL students took and passed many of the key courses compared to the control students. For example, 41% of the GDL students in Cohort 1 took and passed geometry by the end of year 2 (10th grade) compared to 27% of the control students. We found similar statistically significant positive results for science. For Cohorts 2 and 3, we

found a statistically significant positive difference between GDL and control students starting in the first year (9th grade). For instance, the percentage of GDL students who passed Algebra 1 by the end of year 1 was 12 percentage points higher than the control group for Cohort 2 (46% vs. 34%) and 18 percentage points higher for Cohort 3 (49% vs. 30%). The adjusted effect estimates for course-taking rates and pass rates are presented in Figures 11 and 12, respectively.

Table 18

Estimated Effect of Green Dot Locke on Course-taking and Pass Rates (Matched Sample)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohorts and courses	*N*	Mean	*N*	Mean	Est.	(*p*-value)	Est.	(*p*-value)
Cohort 1, year 1								
Took English 9	130	0.59	124	0.43	-0.16	(0.009)	-0.17	(0.008)
Passed English 9	130	0.33	124	0.37	0.04	(0.504)	0.04	(0.505)
Took Algebra 1	130	0.73	124	0.45	-0.28	(0.000)	-0.28	(0.000)
Passed Algebra 1	130	0.33	124	0.31	-0.02	(0.679)	-0.02	(0.688)
Cohort 1, year 2								
Took English 10	104	0.60	106	0.66	0.06	(0.338)	0.06	(0.370)
Passed English 10	104	0.40	106	0.52	0.12	(0.096)	0.12	(0.096)
Took geometry	104	0.63	106	0.79	0.16	(0.011)	0.15	(0.013)
Passed geometry	104	0.27	106	0.41	0.14	(0.037)	0.14	(0.036)
Took one science course	104	0.53	106	0.79	0.26	(0.000)	0.26	(0.000)
Passed one science course	104	0.30	106	0.50	0.20	(0.003)	0.20	(0.003)
Took history	104	0.58	106	0.54	-0.04	(0.570)	-0.04	(0.529)
Passed history	104	0.38	106	0.33	-0.05	(0.413)	-0.05	(0.439)
Cohort 1, year 3								
Took Algebra 2	94	0.73	94	0.94	0.20	(0.000)	0.20	(0.000)
Passed Algebra 2	94	0.36	94	0.72	0.36	(0.000)	0.36	(0.000)
Took second science	94	0.61	94	0.74	0.14	(0.043)	0.14	(0.035)
Passed second science	94	0.22	94	0.47	0.24	(0.000)	0.24	(0.000)
Took history	94	0.77	94	0.71	-0.05	(0.409)	-0.05	(0.475)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohorts and courses	*N*	Mean	*N*	Mean	Est.	(*p*-value)	Est.	(*p*-value)
Passed history	94	0.40	94	0.39	-0.01	(0.882)	-0.01	(0.884)
Cohort 2, year 1								
Took English 9	443	0.70	438	0.87	0.17	(0.000)	0.17	(0.000)
Passed English 9	443	0.38	438	0.41	0.03	(0.336)	0.03	(0.404)
Took Algebra 1	443	0.77	438	0.87	0.09	(0.000)	0.09	(0.000)
Passed Algebra 1	443	0.34	438	0.46	0.12	(0.000)	0.11	(0.001)
Cohort 2, year 2								
Took English 10	393	0.79	393	0.71	-0.08	(0.008)	-0.08	(0.008)
Passed English 10	393	0.39	393	0.40	0.02	(0.610)	0.02	(0.593)
Took geometry	393	0.77	393	0.80	0.04	(0.193)	0.04	(0.182)
Passed geometry	393	0.37	393	0.42	0.05	(0.145)	0.05	(0.110)
Took one science course	393	0.82	393	1.00	0.18	(0.000)	0.18	(0.000)
Passed one science course	393	0.42	393	0.74	0.32	(0.000)	0.32	(0.000)
Took history	393	0.77	393	0.83	0.06	(0.032)	0.06	(0.032)
Passed history	393	0.38	393	0.58	0.19	(0.000)	0.19	(0.000)
Cohort 3, year 1								
Took English 9	465	0.75	465	0.89	0.15	(0.000)	0.15	(0.000)
Passed English 9	465	0.40	465	0.58	0.18	(0.000)	0.19	(0.000)
Took Algebra 1	465	0.78	465	0.94	0.15	(0.000)	0.15	(0.000)
Passed Algebra 1	465	0.30	465	0.49	0.18	(0.000)	0.19	(0.000)

Note. Results are for students in the matched sample for a given cohort and year. Course-taking and pass rates are for the listed course or a higher-level course in a given year.
*The adjusted difference controls for a student's 8th grade CST ELA scale score.

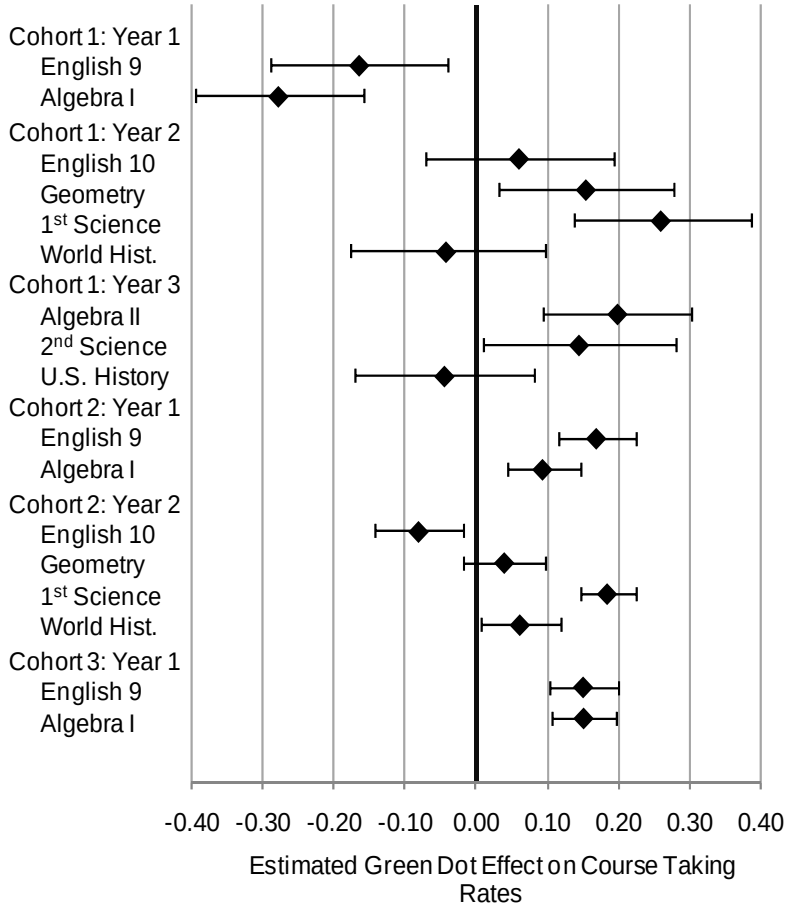

Figure 11. Summary of estimated Green Dot effects on proportion of students taking a given course, by cohort and year (matched samples). *Reported point estimates (diamonds) and approximate 95% confidence intervals (horizontal bars) are based on the regression adjusted effect estimates.

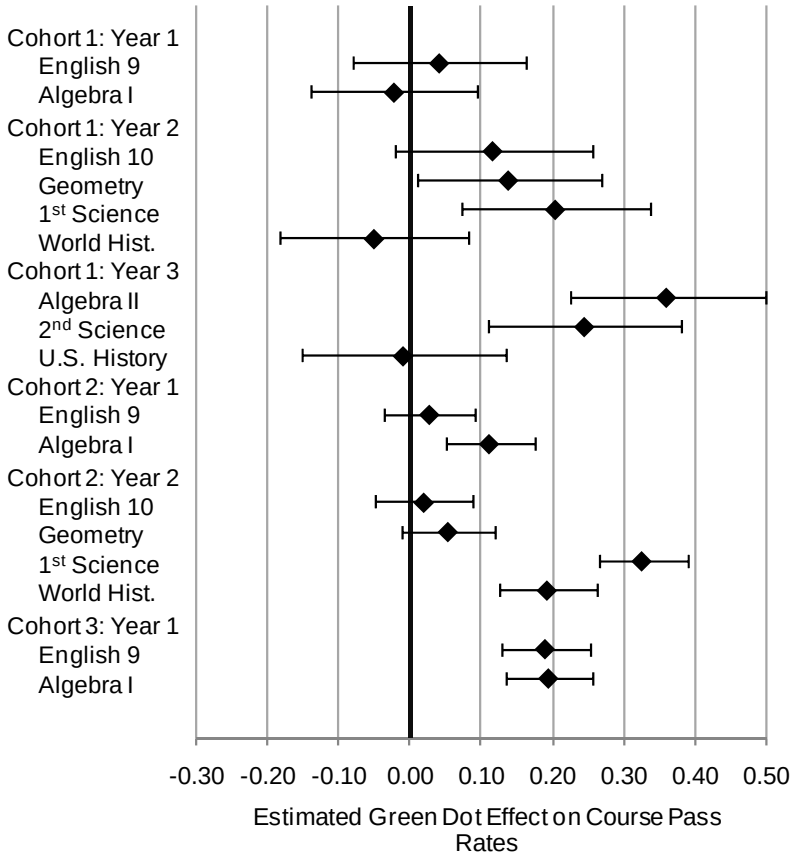

Figure 12. Summary of estimated Green Dot effects on proportion of students passing a given course, by cohort and year (matched samples).
*Reported point estimates (diamonds) and approximate 95% confidence intervals (horizontal bars) are based on the regression adjusted effect estimates.

Student Achievement

Course-taking and pass rates provide a measure of student achievement. Standardized tests provide another gauge for evaluating how much students learn while they are in school. To examine whether GDL improved student learning, we relied on student performance data on the ELA and Mathematics CST and the CAHSEE.

California Standards Test

We focused on CST scale scores instead of performance levels because they were more likely to detect treatment effects with the wider range of scale scores and provide a more sensitive measure of student achievement. As with the analysis for school attendance, the CST analysis compared GDL students who were enrolled in all semesters up to and including the end-time point to the matched control students who were enrolled in all semesters up to and including the end-time point. We also conducted separate analyses for each CST mathematics test (e.g., Algebra 1 and geometry). This comparison allowed us to examine

CST performance for students who were enrolled for the same number of semesters during high school, took the same test, and had similar 8th grade characteristics.

Results from the CST analysis are presented in Table 19 by cohort, year, and test for the matched samples. For the mathematics tests, only those tests that represented the two main mathematics courses in each grade are reported.[3] The table columns are set up in the same way as the columns in the previous tables. The number of students in the matched control and GDL groups should be the same for a given cohort, year, and test. However, mathematics test-taking differences between GDL and control students caused unexpected differences in the number of students within a comparison. For example, for Cohort 3 in year 1, 117 control students took Algebra 1 while 62 GDL students took Algebra 1—even though the two matched groups had an equal number of students take Algebra 1 in middle school. In most comparisons, however, the differences were small and not likely to significantly alter the findings. Yet, for some comparisons the differences were large and may have led to less valid comparisons—such as for the Cohort 3 CST geometry test score comparison. It is important to note that in all cases, one should give more credence to the adjusted estimates because they adjusted for any residual group differences in 8th grade CST performance.

[3] Across the cohorts and years, the two main mathematics courses for a given year captures between 88% and 100% of the matched GDL students. In four of the six cohort-year combinations, the two main mathematics courses include at least 95% of the matched GDL students.

Table 19

Estimated Effect of Green Dot Locke on CST Scale Scores (Matched Sample)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohort/year/subject	*N*	Mean	*N*	Mean	Est.	(*p*-value)	Est.	(*p*-value)
Cohort 1, year 1								
CST ELA	165	305.50	165	314.74	9.24	(0.060)	9.22	(0.003)
CST Algebra 1	138	264.12	140	278.63	14.51	(0.005)	14.70	(0.002)
CST geometry	23	273.83	24	307.17	33.34	(0.020)	27.11	(0.005)
Cohort 1, year 2								
CST ELA	121	300.01	121	302.26	2.26	(0.709)	3.28	(0.438)
CST geometry	67	244.31	84	256.56	12.25	(0.011)	13.07	(0.006)
CST Algebra 2	35	244.74	31	293.32	48.58	(0.000)	33.54	(0.001)
Cohort 1, year 3								
CST ELA	94	296.15	94	294.80	-1.35	(0.856)	-4.38	(0.440)
CST Algebra 2	45	243.64	61	246.20	2.55	(0.626)	3.66	(0.484)
CST sum. Math	24	243.83	26	279.54	35.71	(0.036)	29.84	(0.041)
Cohort 2, year 1								
CST ELA	489	301.57	489	304.60	3.02	(0.281)	2.93	(0.104)
CST Algebra 1	380	266.11	415	266.71	0.60	(0.809)	0.77	(0.735)
CST geometry	94	270.83	74	293.04	22.21	(0.000)	16.05	(0.001)
Cohort 2, year 2								
CST ELA	393	295.14	393	298.85	3.71	(0.252)	3.99	(0.070)
CST geometry	225	251.93	221	255.33	3.40	(0.232)	3.30	(0.222)
CST Algebra 2	123	256.79	124	268.57	11.78	(0.039)	11.37	(0.017)
Cohort 3, year 1								
CST ELA	465	303.55	465	309.99	6.44	(0.036)	8.45	(0.000)
CST Algebra 1	330	264.35	396	292.55	28.20	(0.000)	23.74	(0.000)
CST geometry	117	274.32	62	287.63	13.31	(0.032)	6.34	(0.159)

Note. Results are for students in the matched sample for a given cohort and year.
*The adjusted difference controls for a student's 8th grade CST scale score for the respective subject test.

Overall, the CST results indicated that the GDL students performed, on average, as well or better than the control students. However, effects of GDL were not consistent across cohorts, years, or tests. On the ELA CST, GDL students had statistically significant higher scale scores in year 1 for Cohorts 1 and 3 but did not have significantly different scores in other years for Cohort 2. The adjusted effect estimates for the ELA CST are summarized in

Figure 13. More positive effects were found for the Mathematics CST. GDL students who took the Algebra 1 CST in Cohorts 1 and 3 (in year 1) also experienced statistically significant positive effects but their Cohort 2 counterparts did not. Similarly, GDL students in Cohorts 1 and 2 who took the geometry CST in year 1 experienced statistically significant positive effects but their Cohort 3 counterparts did not. In year 2, Cohort 1 GDL students outperformed the control students on the geometry and Algebra 2 CST but the Cohort 2 GDL students only outperformed the control students on the Algebra 2 CST. The inconsistency in results makes it difficult to draw strong conclusions from the CST data—yet the general trend is a positive one for GDL students. The adjusted effect estimates for the mathematics CST are summarized in Figure 14.

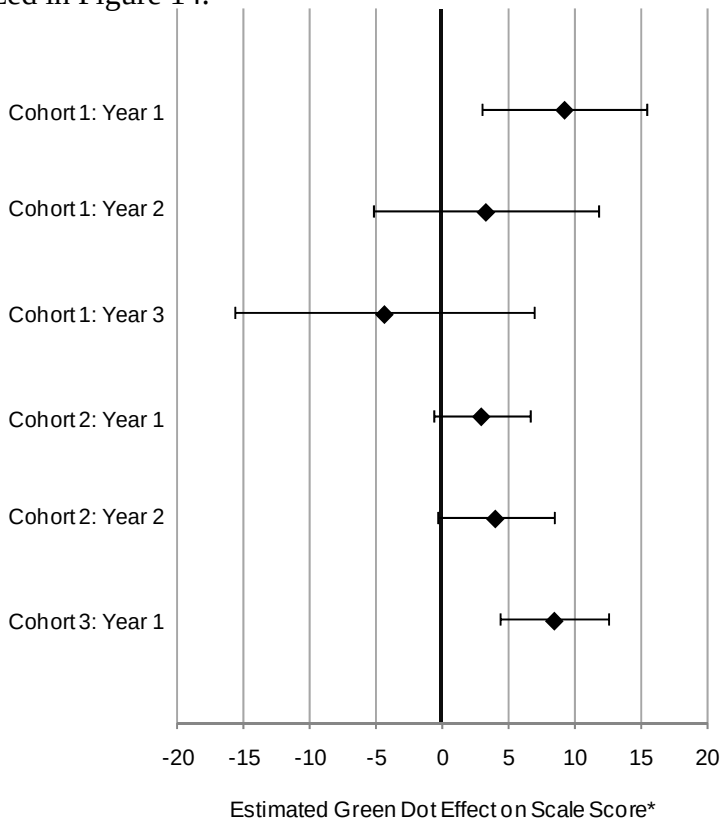

Figure 13. Summary of estimated Green Dot effects on CST ELA scale scores, by cohort and year (matched samples).
*Reported point estimates (diamonds) and approximate 95% confidence intervals (horizontal bars) are based on the regression adjusted effect estimates.

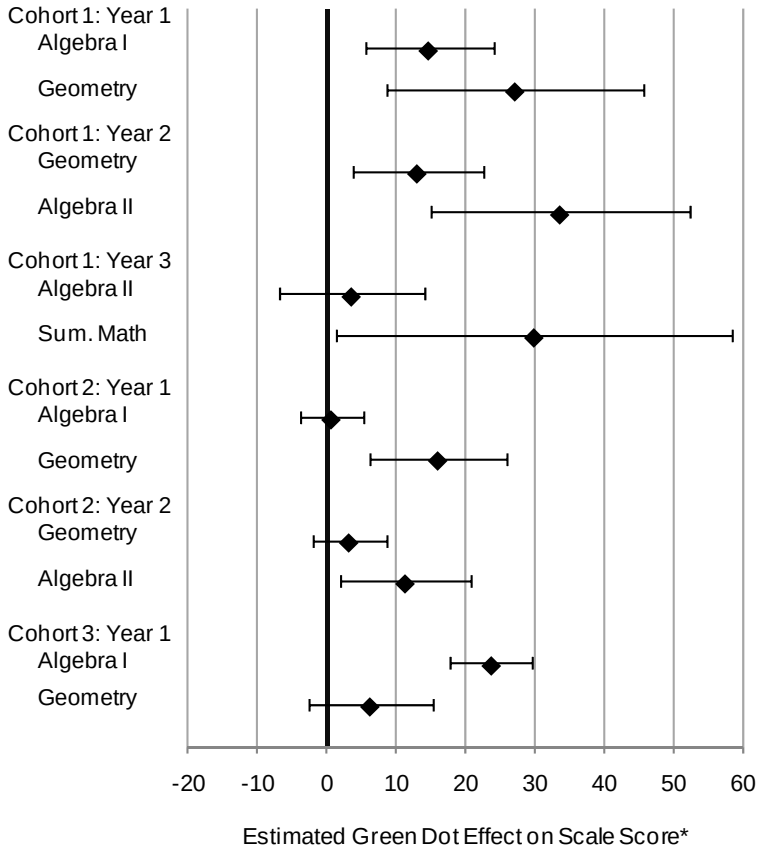

Figure 14. Summary of estimated Green Dot effects on CST Math scale scores, by cohort, year, and math test (matched samples).
*Reported point estimates (diamonds) and approximate 95% confidence intervals (horizontal bars) are based on the regression adjusted effect estimates.

California High School Exit Exam

The CAHSEE is arguably the most important benchmark used to measure California high school students' learning progress. In fact, students cannot graduate without passing both the ELA and mathematics sections of this test. The CAHSEE also provides a more comparable measure of student learning because all students take the same test for the first time in 10th grade (as opposed to the CST mathematics tests, which are tied students' specific courses). If students do not pass either the ELA or mathematics portion of the CAHSEE, they can retake the test multiple times in 11th and 12th grade. To examine the effect of the GDL transformation on CAHSEE performance, we focused on student scale scores for the first attempt of the ELA and mathematics sections, as well as the percentage of students who passed each section on the first attempt (10th grade) or passed on any attempt by the end of their third year in high school (11th grade).

As with the analysis of CST performance, we compared GDL students who were enrolled in all semesters up to and including the end-time point (either year 2 or year 3) to the matched control students who were enrolled in all semesters up to and including the end-time point. This comparison allowed us to examine CAHSEE performance for students who were enrolled for the same number of semesters during high school and had similar 8th grade characteristics. We were able to estimate both the first attempt and any attempt outcomes for Cohort 1 but only have first attempt data for Cohort 2. Since Cohort 3 students just completed 9th grade, they had not yet taken the CAHSEE.

Results from the CAHSEE analysis are presented in Table 20 by cohort, year, and outcome measure for the matched samples. The table columns are set up in the same way as the columns in the previous tables for CST results. The number of students in the matched control and GDL groups should be the same for a given cohort, year, and outcome. However, test-taking differences between GDL and control students caused unexpected differences in the number of students within a comparison. For example, for Cohort 1 in year 2, 121 GDL students took the ELA test but only 109 control students took the ELA test. In most comparisons, the differences were small and were not likely to significantly alter the findings. However, one should give more credence to the adjusted estimates because they adjusted for any residual group differences in 8th grade CST performance. The first part of Table 21 reports the results for the Cohort 1 students and the matched control students who retook the CAHSEE after failing their first attempt in 10th grade. As shown, GDL re-takers had higher passing rates of 17% than the control students in the raw percentage; the difference was statistically significant for passing the mathematics CAHSEE. The second part of Table 21 reports the corresponding results for Cohort 1 and their matched control students. Regardless of how many attempts they made in the 10th and 11th grades, GDL students maintained their lead on the CAHSEE mathematics section.

Like the CST results, the CAHSEE results indicated that GDL students generally performed better than control students. For Cohort 1, GDL did not significantly affect how well students performed on their first attempt at the CAHSEE ELA and mathematics tests. By the end of their third year, however, Cohort 1 GDL students were more likely to have passed the CAHSEE mathematics section than their control group counterparts (84% vs. 70%). For Cohort 2, GDL did significantly affect how well students performed on their first attempt. For students with average 8th grade CST performance (adjusted differences), GDL students scored approximately four points higher on the ELA test and seven points higher on the mathematics test, on average, than the control students. The higher scores resulted in

about a six percentage-point higher passing rate for GDL students. The adjusted effect estimates are summarized in Figure 15.

Table 20

Estimated Effect of Green Dot Locke on CAHSEE Performance: 1st Attempt in 10th (Matched Sample)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohort/year	*N*	Mean	*N*	Mean	Est.	(*p*-value)	Est.	(*p*-value)
Cohort 1, year 2 (1st attempt)								
ELA Score	109	354.94	121	350.93	-4.00	(0.311)	-1.94	(0.471)
Math Score	107	357.56	121	356.70	-0.86	(0.835)	1.06	(0.751)
% Passed ELA	109	0.62	121	0.52	-0.10	(0.116)	-0.08	(0.160)
% Passed Math	107	0.59	121	0.55	-0.04	(0.512)	-0.02	(0.695)
Cohort 2, year 2 (1st attempt)								
ELA Score	344	353.74	381	356.09	2.36	(0.301)	3.79	(0.014)
Math Score	346	354.74	373	361.02	6.27	(0.007)	6.99	(0.000)
% Passed ELA	344	0.54	381	0.58	0.04	(0.253)	0.06	(0.035)
% Passed Math	346	0.55	380	0.60	0.05	(0.194)	0.06	(0.063)

Note. Results are for students in the matched sample for a given cohort and year.
*The adjusted difference controls for a student's 8th grade CST scale score for the respective subject test.

Table 21

Estimated Effect of Green Dot Locke on CAHSEE Performance (Matched Sample)

	Control group		GDL group		Raw difference		Adjusted difference*	
Cohort/year	*N*	Mean	*N*	Mean	Estimate	(*p*-value)	Estimate	(*p*-value)
Cohort 1: year 2, passed in two or more attempts								
% passed ELA	41	0.24	58	0.41	0.17	(0.081)	0.16	(0.097)
% passed math	44	0.32	55	0.49	0.17	(0.085)	0.20	(0.047)
Cohort 1: year 3, any attempt								
% passed ELA	93	0.73	94	0.78	0.05	(0.474)	0.03	(0.594)
% passed math	93	0.70	94	0.84	0.14	(0.021)	0.14	(0.018)

Note. Results are for students in the matched sample for a given cohort and year that passed the CAHSEE in two or more attempts. The sample size N is the number of students in each group that failed the first attempt and retook the exam.
*The adjusted difference controls for a student's 8th grade CST scale score for the respective subject test.

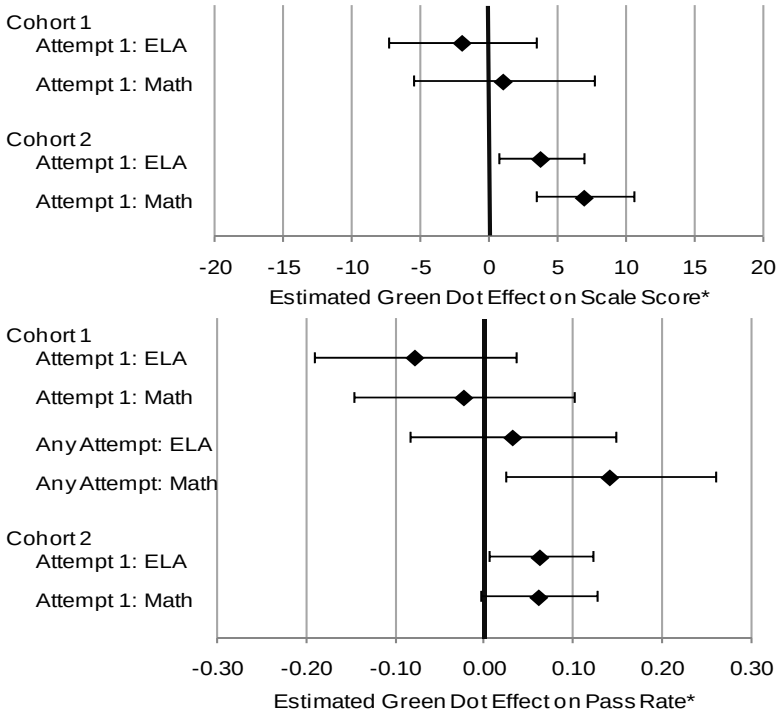

Figure 15. Summary of estimated Green Dot effects on CAHSEE performance, by cohort and test (matched samples).
*Reported point estimates (diamonds) and approximate 95% confidence intervals (horizontal bars) are based on the regression adjusted effect estimates.

While one should be cautious in interpreting these findings as causal, all the outcomes examined for Evaluation Question 3 show promising effects. Persistence rates; course-taking and passing rates; and achievement scores suggest that 9th graders who entered GDL often performed better (and never worse) than they would have if they attended a comparable LAUSD high school. Positive GDL transformation effects were generally more prevalent for the second cohort of students than for the first cohort. For instance, compared to the matched non-GDL students, GDL students in Cohort 2 were more likely to stay in the same school over time, take and pass some of the core 9th and 10th grade courses, and score higher on the CAHSEE. We did not find any statistically significant negative effects of the GDL transformation for Cohorts 2 and 3. More comprehensive results should materialize as these students progress through high school to graduation.

Conclusion

Summary of Findings

Based on descriptive analysis, we found that the demographic profiles for the past three entering 9th grade GDL cohorts were similar and also comparable to the profile prior to the GDL transformation. GDL students were almost entirely Latino or African American, likely participants of the NSLP, and a large portion of GDL students were classified as ELs. 8th grade California Standards Test (CST) scores for entering GDL students in Cohorts 1, 2, and 3 were low—with the majority of students scoring below basic and far below basic on mathematics and English language arts (ELA). Freshmen GDL students who attended GDL's feeder middle schools had characteristics and CST scores that were similar to students who attended the three comparison high schools. In terms of school persistence, school attendance, course-taking and completion, and standardized test scores—we found promising trends that indicate increased retention rates across cohorts. Relative to comparison high schools, GDL students' overall total enrollment in core courses increased over the years. Furthermore, GDL pass rates increased for particular courses and California High School Exit Exam (CAHSEE) scores continued to rise.

The results from matched samples suggest that on various student outcome measures, 9th graders who entered GDL often did better than (and at least as well as) they would have if they attended a comparable LAUSD high school. Moreover, the positive GDL transformation effects were generally more prevalent for the second cohort of students than for the first cohort. For example, compared to the matched non-GDL students, GDL students in Cohort 2 were more likely to stay in the same school over time, take and pass specific core 9th and 10th grade courses, and score higher on the CAHSEE. We did not find any

statistically significant negative effects of the GDL transformation. In addition, given the progressive pattern of increasing results for each cohort, broader effects may well materialize as current students progress through high school and on to graduation as well as for new cohorts.

Study Limitations

Like all studies, our analysis was constrained to the available data and the conditions under which the GDL transformation was implemented. These overall constraints pose limitations in regards to the depth with which we could explore trends in academic outcomes and the extent to which one should interpret the effect estimates for Evaluation Question 3 as causal. Before addressing caveats to the causal interpretations of the results, we would like discuss more general limitations of the study's design.

Our analyses required the processing of student-level data from both GDL and LAUSD. In some cases, the availability of data from one or both sources did not allow us to address important questions. Most importantly, we did not have data on students who left GDL and LAUSD during the time period examined for this report. As a result, we cannot examine outcomes for these students. Similarly, we did not have pre-high school data for students who entered GDL from outside the three local districts from which we received LAUSD data. Thus, our analyses examined students from specific local districts and who attended GDL at defined points in time; this did not capture all students exposed to the GDL transformation. Additionally, we only had data that covered the first three years of the GDL transformation; hence, we cannot report on graduation outcomes.

One of the most challenging outcomes to examine, from a data availability perspective, was course-taking and completion. The course-taking data were not aligned across GDL and LAUSD data sources (particularly in terms of course names/codes). For example, for effect estimates for Evaluation Question 3, we did not report English course-taking and passing effects in 11th grade because we could not rectify database differences in the 11th grade English core courses. Additionally, we did not have access to summer school or intersession course-taking for LAUSD students, so our results are restricted to courses taken and passed during the fall and spring semesters. Given GDL's heavy use of intercession courses for struggling students, this omission most likely underestimates the reported course-taking and pass rate effects for the GDL transformation.

In terms of assessing whether observed student outcomes were causally affected by GDL transformation, we were restricted by the fact that students were not randomly assigned to attend one of the GDL academies or another high school. In the absence of random

assignment, observed differences between GDL and non-GDL students could be due to pre-existing differences between the students (e.g., ability and motivation) rather than exposure to the transformation. By matching GDL students to non-GDL students with similar 8th grade characteristics and test performance observed in the data, we were able to rule out these measured factors as causing outcome differences between matched GDL and non-GDL students. This provided some credibility to claims that the observed differences were due to GDL transformation. We were not, however, able to rule out the possibility that some pre-existing factors (absent from the available data and the matching process) explained the observed group differences instead of the transformation.

Even if our quasi-experimental design perfectly adjusted for pre-existing differences between GDL and non-GDL students, three other factors complicated our ability to interpret group differences as causal effects. First, as previously stated, we did not have outcome data for students who left GDL and LAUSD. Given that there were some differences in school persistence between the matched GDL and non-GDL students, the reported end-of-year outcome effects failed to account for any selective dropout effect. Additionally, we found differences in the mathematics courses that GDL students took at specific times during high school compared to the matched non-GDL students. This differentiation may have weakened the comparability of the matched groups for the analysis of the CST Mathematics outcomes, since students had to have CST scale scores for a specific mathematics subtest to be included in the analysis. Similarly, missing data for some outcomes may have weakened the comparability of the matched groups for the analysis of those outcomes.

Furthermore, our analysis was restricted by available time and resources, which limited our ability to examine the results for different student subgroups and investigate interesting secondary questions that arose during the analysis. These limitations will also be addressed in the following section, which provides recommendations for future research.

Recommendations

Although it is premature to draw firm conclusions from the data assembled in this report, based on our analysis, we would like to draw Green Dot's and GDL's attention to the following recommendations:

We strongly feel that Green Dot should continue to document school improvement and student academic progress at Locke. Moreover, access to comprehensive longitudinal data is essential. For that reason, we urge Locke to re-integrate with the LAUSD data system to the greatest extent possible. For the sake of comparability across years, it is imperative for GDL to maintain consistent course codes as well as a steady record of the content included in

equivalent courses. Lastly, GDL should acquire all previous academic records of incoming students and continue to collect key academic and demographic information in a format that is easily linked to historical data.

In light of the emphasis that Green Dot places on college readiness, having A-G completion rates available for analysis would likely bolster the case for the success of the GDL transformation. For the current study, we approached the college readiness question tentatively by focusing on four main subjects. We then elected core courses in those subject areas for each grade level and investigated whether a greater number of students were taking these courses and passing them. We reasoned that if students take and pass all the core courses at the right time, they would fulfill the A-G requirement and be ready for college.

Furthermore, we noticed that both GDL and LAUSD lost about 30% of students between the fall semester of 9th grade and the fall semester of 10th grade. There also seemed to be a big drop in retention rates between the fall and spring semesters. We suggest that perhaps the administration could ponder creative ways to engage students during the summer and motivate them to return in the fall semester—especially during the summer before 9th grade students return as 10th graders.

We provide the following additional suggestions for future research of Green Dot Locke:

GDL should conduct follow-up evaluations of students. For example, by adding 2010-11 data to the present analysis, GDL could potentially see its transformation effect on the first cohort of GDL students. Considering that GDL implementation was partial in 2007-08 and complete in 2008-09, it would be more interesting and valid to examine the full effect of the GDL transformation on the second cohort of students who began school during the 2008-09 academic year.

An interesting question which was not addressed in the current study is whether changes in the enrollment for each grade level affect school culture and student outcomes. As reported in Figure 3, among the 3160 students enrolled at GDL during the 2004-05 school year, 1451 (45.9 %) were 9th graders. The numbers of students in higher grades was progressively smaller: 883 tenth graders (27.9 %), 531 eleventh graders (16.8 %), and 295 twelfth graders (9.3 %). Notably, the freshman class was almost five times the size of the senior class. Of course, there are likely to be many factors that contribute to this imbalance across grade levels—not only drop-out rates but also the fact that those cohorts were not equal in size when they began 9th grade. Regardless of the cause, one practical consequence is that students in lower grades have relatively fewer models of successful advancement

through high school (and ultimately, graduation). It is possible that such imbalance could affect school culture. For instance, does a scarcity of upperclassmen affect students' expectations of their own progression to the 12th grade and their subsequent graduation? Does it impact the expectations of school staff?

By 2009-10, enrollment across the four grade levels was more balanced. Of the 3138 students, only 796 (20.6 %) were enrolled in 9th grade and 646 (25.4 %) in 12th grade. Once again, it is likely that many factors contributed to this balance. As the Green Dot academies were phased-in at Locke, the number of 9th graders enrolled was smaller than in previous years. In addition, it appears that some of the students who dropped out were replaced by students transferring in, thereby reducing the effects of drop-out on overall enrollment. In any case, it is clear that the distribution of students across the grade levels changed. It would be worthwhile to investigate how this may affect other outcomes. Of course, the academies were introduced in such a way that the upperclassmen were not enrolled in the same academies as the 9th grade students. Beginning with the 2010-2011 school year, Animo Locke Tech and Animo Locke #1 became the first two permanent academies that have students enrolled at all four grade levels. Other academies will reach their full enrollment in subsequent years. As that occurs, it would be interesting to examine how an increased presence of upperclassmen (if maintained beyond the initial phase-in) affects various aspects of school culture and in turn, student outcomes—including graduation rates.

In conclusion, Green Dot Public School's transformation of Alain Leroy Locke High School is a complex story that is just beginning to unfold. The first chapter reveals Green Dot's challenges as well as evidence of its success in addressing these issues. As GDL's story develops, future chapters should solidify its evidence base and hold important lessons that can be shared with the field.

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APPENDIX A:

DATA VARIABLES

Data available to the general public and student level data received from the school districts were used for the current report. The public data sources were the California Department of Education (CDE) website, (e.g., DataQuest, CBEDS) and the LAUSD website (e.g., school report cards). We also requested and received the following student level data from Green Dot and LAUSD (for local school districts 5, 7, and 8) for 2006-07, 2007-08, 2008-09, and 2009-10. Data included:

- Grade level
- Gender
- Race/ethnicity
- National School Lunch Program(NSLP) status
- English Learner (EL) status
- Special education status
- Parent education
- English Language Arts CST scaled scores
- Mathematics CST scaled scores and tests taken
- Days enrolled and attended
- ELA CAHSEE scaled scores, proficiency levels, and testing dates
- Mathematics CAHSEE scaled scores, proficiency levels, and testing dates
- Courses taken and course grades

LAUSD provided testing dates and scale scores for the CAHSEE data. They also provided a district-revised testing condition indicator variable, which indicates whether a student passed or failed the CAHSEE. If a student took the CAHSEE with modifications and achieved a passing score, he or she would not receive a pass until he or she applied for and received approval for a waiver from LAUSD. This means that if a student waiver is in process, that student could be incorrectly identified as having failed the CAHSEE. Green Dot provided the testing dates, scale scores and the CDE indicator that describes whether the student received a pass, fail, modification or if the student was caught cheating. Several other indicators were included but not used (e.g., a student moved and previously passed).Students

who received a pass or modification with a scale score of over 349 were coded as having passed. Students who received a fail, modification, or who cheated and earned a scale score of less than 350 were coded as having failed. Due to differences between the format of the LAUSD and Green Dot data, a small number of students in the LAUSD data may have not have been counted as passing the CAHSEE because their waiver applications were not processed at the time LAUSD provided the data. While we do not have data on the number of LAUSD students who took the CAHSEE with a modification, we do know that of the students in 2006-07 through 2009-10 who scored over 350 on the CAHSEE, less than half of one percent were coded as a fail by LAUSD at the time we received the data.

APPENDIX B:

ESTIMATION OF TREATMENT EFFECTS ON OUTCOMES NOT OBSERVED FOR ALL STUDENTS

Our goal in the analysis of outcome measures is to obtain estimates of average treatment effects, the mean difference between students on the outcome variables by their enrollment status: enrollment in GDL or in one of the comparison high schools.Of course, no student is observed under both, so our effect estimates are based on differences of group means. The underlying assumption of this approach is that the expected values of mean differences in potential outcomes are equal to the differences in the expected values of group means. Matching procedures are used to ensure that the GDL students are compared to students at comparison schools who are similar in important background characteristics.

However, we face an interesting challenge when outcomes are not observed due to a student leaving the school in which he or she was initially enrolled. Another challenge appears when a student drops out completely. Although this could be viewed as a problem of missing data, some authors (e.g., Zhang and Rubin, 2003) have argued that such data may be more accurately described as "truncated." The distinction has some important implications for data analysis. Here, we describe the problem and explain alternate approaches that we took in order to obtain estimates of the treatment effects.

We can easily imagine a situation in which a student would drop out of school under one treatment but not the other. Of course, we could estimate the effect that the treatment has had on a student's school persistence or dropout status. However, we may also be interested in the effect of the treatment on outcomes (e.g., end-of-year test scores) and this is where we would run into a problem. If we estimate the treatment effect by taking the difference between the mean test scores of those remaining in the two groups, we would be including some individuals in that analysis that would have dropped out if they had been in the other group. This introduces bias into the estimate.

Due to this bias, Zhang and Rubin (2003) argue that treatment effects should not be estimated for such individuals, since their outcomes may only be defined under one of the two treatments. If the outcome is not defined for at least one of the conditions, then the difference between potential outcomes is also not defined. Thus, there can also be no treatment for students who would drop out under either treatment. In other words, the effect on such end-of-year outcomes should be based only on those students who would remain in school under either treatment.

To clarify this concept, in Table B1, we described four unobserved groups of students, defined by school persistence in response to the alternative treatments. Table B1 presents these four groups and their values for two outcomes, *P* and *Y*. Let *P* represent school persistence and *Y* be an outcome whose observation depends on persistence—an end-of-year test score, for example. Then $P_i(0)$ and $P_i(1)$ represent the potential outcomes for person *i* under treatments 0 and 1, respectively. If the student remains at their school of initial enrollment, *P* takes a value of 1. If not, *P* has a value of 0. The groups reflect the four possible patterns of potential outcomes for persistence. For each group, the treatment effect is the difference in the potential outcomes. For persistence, this difference is defined for all four groups. However, whenever *P* is 0, we see that the value of *Y*—the end-of-year test score—is not defined (as indicated by an asterisk). In those cases, the treatment effect on Y is also not defined. Thus, we see that the treatment effect on end-of-year test scores is only meaningful for the students who remain in school under either treatment (i.e., for Group 1).

Table B1

Unobserved Groups of Students, Defined by Effect of Treatment on Persistence

	Treatment 1		Treatment 0		Treatment Effect	
Group	P	Y	P	Y	P	Y
1	$P_i(1)=1$	$Y_i(1)$	$P_i(0)=1$	$Y_i(0)$	$P_i(1)-P_i(0)=0$	$Y_i(1)-Y_i(0)$
2	$P_i(1)=1$	$Y_i(1)$	$P_i(0)=0$	*	$P_i(1)-P_i(0)=1$	*
3	$P_i(1)=0$	*	$P_i(0)=1$	$Y_i(0)$	$P_i(1)-P_i(0)=-1$	*
4	$P_i(1)=0$	*	$P_i(0)=0$	*	$P_i(1)-P_i(0)=0$	*

Note. Adapted from Zhang and Rubin (2003).

The problem, of course, is that the four groups described in Table B1 are not actually observable. We know the treatment assignment and how the student responds to that treatment with respect to persistence. However, we do not know how the student would have responded, given the other treatment. Thus, the students from either treatment group who remain at their school (i.e., P_i=1) include both those who would remain regardless of treatment assignment and those who remain only under the actual treatment received (and who, given the other treatment, would have left their school). In other words, those with treatment 1 and who remain in school could be in either group 1 or 2 in Table B1. Those with treatment 0 who remain could belong to either group 1 or 3. Since the treatment effect should

only be estimated for students in Group 1, we need an approach that accounts for these mixed groups.

Our main approach, as presented in the main report, depended on the specific outcome being examined. As described above, the treatment effect on persistence is defined for all four groups of students because the outcome itself is defined in all cases. Accordingly, we establish cohorts of students that are similar at the time of treatment assignment (entry into 9th grade) and examine differences in rates of persistence at various points in time. However, other outcomes—attendance rates, course-taking, and CST and CAHSEE scores,—all depend on students' enrollment status. If a student has left her school, these outcomes are no longer defined and treatment effects cannot be calculated. Thus, we use a restricted matching procedure in which GDL students who remain at their school through the relevant points in time (e.g., through spring of 10th grade for the CAHSEE) are matched with students from comparison schools who also remain. This ensures that the outcomes are observed for both groups of students. Although the potential outcome for the counter-factual treatment condition is unknown, this approach—by conditioning on persistence—reduces bias in the estimated treatment effects on other outcomes.

We can compare the results from the above approach to those obtained by two alternative approaches. The first alternative, proposed by Zhang and Rubin (2003), uses the proportions of students observed in the two treatment groups to establish bounds on the treatment effect. Although this approach tends to provide rather wide ranges of possible effects, Zhang and Rubin describe two assumptions that may be imposed in order to reduce these ranges.

- The first assumption is monotonicity, meaning that the effect of treatment on persistence goes in only one direction. Specifically, there may be students who would drop out of from the comparison schools but not from GDL.
- The second assumption that can narrow the possible range of the treatment effect is ranked average score, in which the average value of the outcome of interest for those students who would have left under the alternative (counter-factual) treatment is assumed to be lower than the average of the students who remain.

The imposition (or not) of these two assumptions creates four alternative calculations for the bounds on the treatment effect: (1) neither assumption is made, (2) only monotonicity is assumed, (3) only ranked average score is assumed, (4) both assumptions are made. Details concerning the calculations for each method are provided in Zhang and Rubin (2003) and further discussed in Imai (2007). We analyzed the data for all four calculations.

The second alternative approach accounting for effects on persistence is to analyze the outcome data for only those matched pairs of students that remain intact at the points in time for which we wish to examine other outcomes. In other words, we use the outcome for each student's match as the potential outcome under the alternative treatment. In that way, each student may be classified into one of the otherwise unobservable groups described in Table B1. Table B2 describes the distribution of students into the four groups displayed in Table B1, according to the pattern of potential outcomes for persistence.

Table B2

Observed Groups of Students Using Actual Data, Defined by Effect of Treatment on Persistence

	Principal stratum (based on matched pairs)														
	Group 1: $P_i(T)=1, P_i(C)=1$		Group 2: $P_i(T)=1, P_i(C)=0$		Group 3: $P_i(T)=0, P_i(C)=1$		Group 4: $P_i(T)=0, P_i(C)=0$		Total $P_i(T)=1$		Total $P_i(C)=1$		Raw difference		
Group	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	(*p*-value)
Cohort 1															
Year 1 fall									193	100.0	193	100.0			
Year 1 spring	158	81.9	12	6.2	20	10.4	3	1.6	170	88.1	178	92.2	-8	-4.1	(0.173)
Year 2 fall	114	59.1	31	16.1	40	20.7	8	4.1	145	75.1	154	79.8	-9	-4.7	(0.274)
Year 2 spring	97	50.3	41	21.2	42	21.8	13	6.7	138	71.5	139	72.0	-1	-.5	(0.910)
Year 3 fall	72	37.3	42	21.8	48	24.9	31	16.1	114	59.1	120	62.2	-6	-3.1	(0.533)
Year 3 spring	64	33.2	43	22.3	48	24.9	38	19.7	107	55.4	112	58.0	-5	-2.6	(0.609)
Cohort 2															
Year 1 fall									565	100.0	565	100.0			
Year 1 spring	477	84.4	54	9.6	31	5.5	3	0.5	531	94.0	508	89.9	23	4.1	(0.012)
Year 2 fall	358	63.4	109	19.3	76	13.5	22	3.9	467	82.7	434	76.8	33	5.8	(0.015)
Year 2 spring	317	56.1	128	22.7	85	15.0	35	6.2	445	78.8	402	71.2	43	7.6	(0.003)
Cohort 3															
Year 1 fall									518	100.0	518	100.0			
Year 1 spring	451	87.1	41	7.9	20	3.9	6	1.2	492	95.0	471	90.9	21	4.1	(0.011)

The Raw Difference column of Table B2 presents the raw differences in the persistence rates between GDL and comparison group students. If we then proceed to analyze the outcomes for the students in group 1 only (the intact pairs), we obtain estimated effects of treatment that may be compared to the large sample bounds described by Zhang and Ruben

(2003) and the point estimates obtained in our report. Tables B3 and B4 present the results across these methods for CST ELA scale scores and attendance rates, respectively.

Table B3

Estimated Effect of Green Dot Locke on CST ELA Scale Scores

	Zhang and Rubin Approach[1]								Prospective/Persistence matching - analysis of intact pairs					
	Method 1		Method 2		Method 3		Method 4		Control		Green Dot		Adjusted difference[2]	
Group	lower	upper	lower	Upper	lower	upper	lower	upper	*N*	Mean	*N*	Mean	Est	(*p*-value)
Cohort 1														
Year 1 (Spring 2008)	-15.0	35.4	6.4	12.3	-0.6	21.8	10.1	12.3	144	304.2	144	315.7	9.3	(0.007)
Year 2 (Spring 2009)	-62.6	72.3	-29.3	38.5	-28.8	38.5	4.5	38.5	89	295.4	89	302.2	7.6	(0.129)
Year 3 (Spring 2010)	-146.8	79.4	N/A	N/A	-82.0	79.4	N/A	N/A	61	293.5	61	290.6	2.3	(0.757)
Cohort 2														
Year 1 (Spring 2009)	-18.6	18.6	-12.9	11.3	-5.0	11.3	0.6	11.3	452	301.9	452	304.9	2.7	(0.155)
Year 2 (Spring 2010)	-51.2	58.0	-28.1	33.0	-20.4	33.0	2.7	33.0	308	295.3	308	297.8	2.6	(0.323)
Cohort 3														
Year 1 (Spring 2010)	-14.7	24.3	-9.0	17.0	-0.2	17.0	5.4	17.0	422	303.2	422	311.1	7.8	(0.000)

[1]Methods correspond to underlying assumptions made concerning the causal effect. All methods assume one potential outcome for each version of treatment and no interference between students (i.e., stable unit treatment value assumption; Rubin, 1980); Method 1 makes no further assumptions. Method 2 adds monotonicity assumption only. Method 3 adds ranked average score assumption only. Method 4 adds both monotonicity and ranked average score assumptions. Monotonicity assumption can only be made when the proportion of students observed in the treatment group is greater than or equal to the proportion observed in the control group. In cases where this is not true, the lower and upper bounds on the treatment effects cannot be calculated and appear as "N/A."[2]The adjusted difference controls for a student's 8th grade CST ELA scale score.

Table B4

Estimated Effect of Green Dot Locke on Attendance Rate

	Zhang and Rubin Approach[1]								Prospective/Persistence matching - analysis of intact pairs					
	Method 1		Method 2		Method 3		Method 4		Control		Green Dot		Adjusted difference[2]	
Group	Lower	Upper	lower	upper	lower	upper	lower	upper	*N*	Mean	*N*	Mean	Est	(*p*-value)
Cohort 1														
Year 1 (Spring 2008)	-0.02	0.04	N/A	N/A	-0.02	0.03	N/A	N/A	158	0.92	158	0.94	0.02	(0.030)
Year 2 (Spring 2009)	-0.09	0.09	N/A	N/A	-0.05	0.05	N/A	N/A	94	0.93	94	0.94	0.01	(0.339)
Year 3 (Spring 2010)	-0.15	0.20	-0.08	0.08	-0.04	0.08	0.02	0.08	62	0.91	62	0.94	0.03	(0.009)
Cohort 2														
Year 1 (Spring 2009)	-0.03	0.03	-0.01	0.02	-0.02	0.02	0.00	0.02	477	0.92	477	0.92	0.00	(0.556)
Year 2 (Spring 2010)	-0.08	0.08	-0.03	0.06	-0.04	0.06	0.01	0.06	315	0.92	315	0.93	0.01	(0.074)
Cohort 3														
Year 1 (Spring 2010)	-0.02	0.03	-0.01	0.03	-0.01	0.03	0.00	0.03	437	0.93	437	0.93	0.00	(0.591)

[1]Methods correspond to underlying assumptions made concerning the causal effect. All methods assume one potential outcome for each version of treatment and no interference between students (i.e., stable unit treatment value assumption; Rubin, 1980); Method 1 makes no further assumptions. Method 2 adds monotonicity assumption only. Method 3 adds ranked average score assumption only. Method 4 adds both monotonicity and ranked average score assumptions. Monotonicity assumption can only be made when the proportion of students observed in the treatment group is greater than or equal to the proportion observed in the control group. In cases where this is not true, the lower and upper bounds on the treatment effects cannot be calculated and appear as "N/A." [2]The adjusted difference controls for a student's 8th grade attendance rate.

As described previously, the large sample bounds without additional assumptions tend to provide fairly wide ranges of treatment effect, those became narrower when monotonicity and ranked average scores are assumed. However, the point estimates for each effect from either the analysis of intact pairs or the restricted matching tend to be consistent with these ranges. It should be noted that there are cases for which the monotonicity assumption is shown to be untenable from the observed data. Specifically, if more students remain in the control group than in the Green Dot Locke group, monotonicity cannot be assumed. Thus, no estimates of the bounds are given by methods 2 and 4 in those situations.

With some exceptions, the results are predominantly quite similar across the approaches. Accordingly, we take the results from the restricted matching to be good

estimates of the treatment effects for those outcomes where some outcomes have been truncated by dropping out.

APPENDIX C:

COMPARISON OF GREEN DOT STUDENTS AND

THEIR MATCHED CONTROL STUDENTS (COHORTS 1 AND 3)

Table C1

Comparison of Matched Non-Green Dot Locke and Green Dot Locke Student 8th Grade Characteristics, Cohort 1

	Persistence		Year 1 outcomes		Year 2 outcomes		Year 3 outcomes	
8th grade characteristics	Non-GDL	GDL	Non-GDL	GDL	Non-GDL	GDL	Non-GDL	GDL
Number of students in cohort	-	198	-	171	-	127	-	99
Number of matched students	193	193	165	165	121	121	94	94
From feeder middle school (%)	86	86	86	86	87	87	86	86
Female (%)	52	52	53	53	52	52	52	52
Race/ethnicity:								
Black / Afr. Am. (%)	21	21	18	18	15	15	7	7
Latino / Hispanic (%)	79	79	82	82	85	85	93	93
Parent's Education:								
High school graduate (%)	22	22	22	22	22	22	22	22
Less than high school (%)	24	24	22	22	27	27	31	31
Unknown (%)	53	53	56	56	50	50	47	47
NSLP (%)	84	84	84	84	88	88	88	88
Language classification:								
English only or IFEP (%)	24	24	22	22	17	17	10	10
RFEP (%)	30	30	32	32	37	37	40	40
English learners (%)	46	46	46	46	45	45	50	50
Students w/ disabilities (%)	9	9	8	8	8	8	7	7
Mean attendance rate (%)	95	95	96	96	97	96	96	96
Mean CST ELA scale score	286	290	290	290	294	293	290	293
Took Algebra 1 CST:								
Took test (%)	52	52	54	54	60	60	62	62
Mean scale score	273	275	275	275	274	274	271	276
Took Gen. Mathematics CST:								
Took test (%)	48	48	46	46	40	40	38	38
Mean scale score	278	274	275	275	283	275	280	274

Table C2

Comparison of Matched Non-Green Dot Locke and Green Dot Locke Student 8th Grade Characteristics, Cohort 3

	Persistence		Year 1 outcomes	
8th grade characteristics	Non-GDL	GDL	Non-GDL	GDL
Number of students in cohort	-	555	-	511
Number of matched students	518	518	465	465
From feeder middle school (%)	89	89	90	90
Female (%)	51	51	50	50
Race/ethnicity:				
Black / Afr. Am. (%)	25	25	23	23
Latino / Hispanic (%)	75	75	77	77
Parent's education:				
High school graduate (%)	25	25	26	26
Less than high school (%)	27	27	29	29
Unknown (%)	47	47	46	46
NSLP (%)	71	71	71	71
Language classification:				
English Only or IFEP (%)	33	33	30	30
RFEP (%)	36	36	37	37
English learner (%)	31	31	32	32
Students w/ disabilities (%)	6	6	5	5
Mean attendance rate (%)	94	94	95	95
Mean CST ELA scale score	294	294	297	295
Took Algebra 1 CST:				
Took test (%)	58	58	59	59
Mean scale score	276	286	280	288
Took General Mathematics CST:				
Took test (%)	42	42	41	41
Mean scale score	279	276	280	279

APPENDIX D:

EVALUATION QUESTION 1 TABLES

Table D1

Cohort 1 Entering Freshmen's 8th Grade Student Characteristics by Group Status, 2006-07

			Attended GDL Feeder middle schools					
	All freshmen @ GDL		Freshmen @ GDL		Freshmen @ comparison high schools		Freshmen @ other LAUSD schools	
8th grade characteristics	*N*	%	*N*	%	*N*	%	*N*	%
Gender:								
Female	108	54	93	53	760	50	208	59
Male	93	46	81	47	761	50	145	41
Total	201		174		1521		353	
Race/Ethnicity:								
Black / Afr. Am.	45	22	37	21	306	20	131	38
Latino / Hispanic	155	77	136	78	1205	79	213	61
Other	1	0	1	1	10	1	3	1
Total	201		174		1521		347	
Parent's education:								
Less than high school	49	24	45	26	464	31	81	24
High school	36	18	27	16	370	25	88	26
Some college	4	2	3	2	26	2	8	2
Unknown*	108	54	95	56	618	42	163	48
Total	201		170		1478		340	
National school lunch program:								
Participant	166	83	141	81	1215	80	272	77
Non-participant	33	16	31	18	305	20	81	23
Unknown	2	1	2	1	3	0	0	0
Total	201		174		1523		353	
Language classification:								
English learner	89	44	78	45	615	40	54	15
English Only	52	26	42	24	352	23	143	41
IFEP	0	0	0	0	54	4	15	4
RFEP	58	29	52	30	494	32	141	40
Unknown	2	1	2	1	8	1	0	0
Total	201		174		1523		353	

			Attended GDL Feeder middle schools					
	All freshmen @ GDL		Freshmen @ GDL		Freshmen @ comparison high schools		Freshmen @ other LAUSD schools	
8th grade characteristics	*N*	%	*N*	%	*N*	%	*N*	%
Special education participation:								
Participant	21	10	17	10	108	7	11	3
Non-participant	180	90	157	90	1415	93	342	97
Total	201		174		1523		353	

Note. *The Unknown category represents cases missing data. This represents 0-1% of the data for most student characteristics. The exception is Parent's Education where we see a large portion (up to 56%) of the data missing for both GDL and LAUSD students. We generally assume that the data missing from this variable is for parents with lower levels of education.

Table D2

Cohort 2 Entering Freshmen's 8th Grade Student Characteristics by Group Status, 2007-08

			Attended GDL Feeder middle schools					
	All freshmen @ GDL		Freshmen @ GDL		Freshmen @ comparison high schools		Freshmen @ other LAUSD schools	
8th grade characteristics	*N*	%	*N*	%	*N*	%	*N*	%
Gender:								
Female	311	49	280	48	740	50	170	54
Male	325	51	301	52	734	50	147	46
Total	636		581		1474		317	
Race/Ethnicity:								
Black / Afr. Am.	167	26	146	25	303	21	94	30
Latino / Hispanic	466	73	432	74	1165	79	220	69
Other	3	0	3	1	6	0	3	1
Total	636		581		1474		317	
Parent's education:								
Less than high school	173	28	160	28	578	40	83	28
High school	138	22	122	21	335	23	95	32
Some college	5	1	5	1	23	2	2	1
Unknown*	308	49	282	50	508	35	120	40
Total	624		569		1444		300	
National school lunch program:								
Participant	554	87	507	87	1235	84	267	84
Non-participant	82	13	74	13	238	16	49	15
Unknown	3	1	1	0	3	0	1	0
Total	639		582		1476		317	
Language classification:								
English learner	228	36	209	36	581	39	53	17
English Only	193	30	170	29	343	23	108	34
IFEP	26	4	26	4	50	3	16	5
RFEP	189	30	176	30	498	34	139	44
Unknown	3	0	1	0	4	0	1	0
Total	639		582		1476		317	

			Attended GDL Feeder middle schools					
	All freshmen @ GDL		Freshmen @ GDL		Freshmen @ comparison high schools		Freshmen @ other LAUSD schools	
8th grade characteristics	*N*	%	*N*	%	*N*	%	*N*	%
Special education participation:								
Participant	63	10	52	9	105	7	12	4
Non-participant	576	90	530	91	1371	93	305	96
Total	639		582		1476		317	

Note. *The Unknown category represents cases missing data. This represents 0-1% of the data for most student characteristics. The exception is Parent's Education where we see a large portion (up to 56%) of the data missing for both GDL and LAUSD students. We generally assume that the data missing from this variable is for parents with lower levels of education.

Table D3

Cohort 3 Entering Freshmen's 8th Grade Student Characteristics by Group Status, 2008-09

			Attended GDL Feeder middle schools					
	All freshmen @ GDL		Freshmen @ GDL		Freshmen @ comparison high schools		Freshmen @ other LAUSD schools	
8th grade characteristics	*N*	%	*N*	%	*N*	%	*N*	%
Gender:								
Female	277	50	248	50	680	50	171	56
Male	281	50	247	50	684	50	134	44
Total	558		495		1364		305	
Race/Ethnicity:								
Black / Afr. Am.	150	27	121	24	245	18	93	30
Latino / Hispanic	406	73	372	75	1113	82	210	69
Other	2	0	2	0	6	0	2	1
Total	558		495		1364		305	
Parent's education:								
Less than high school	148	27	137	28	452	34	76	26
High school	128	23	109	22	321	24	70	24
Some college	7	1	6	1	17	1	6	2
Unknown*	267	49	235	48	541	41	139	48
Total	550		487		1331		291	
National school lunch program:								
Participant	395	70	357	72	850	62	210	69
Non-participant	163	29	138	28	514	38	94	31
Unknown	4	2	0	0	0	0	1	0
Total	562		495		1364		305	
Language classification:								
English learner	165	29	150	30	539	40	50	16
English Only	183	33	151	31	288	21	105	34
IFEP	22	4	19	4	65	5	22	7
RFEP	188	33	175	35	472	35	126	41
Unknown	4	1	0	0	0	0	2	1
Total	562		495		1364		305	

			Attended GDL Feeder middle schools					
	All freshmen @ GDL		Freshmen @ GDL		Freshmen @ comparison high schools		Freshmen @ other LAUSD schools	
8th grade characteristics	*N*	%	*N*	%	*N*	%	*N*	%
Special education participation:								
Participant	47	8	43	9	112	8	8	3
Non-participant	515	92	452	91	1252	92	297	97
Total	562		495		1364		305	

Note. *The Unknown category represents cases with missing data. This represents 0-2% of the data for most student characteristics. The exception is Parent's Education where we see a large portion (up to 49%) of the data missing for both GDL and LAUSD students. We generally assume that the data missing from this variable is for parents with lower levels of education.

Table D4

Cohort 1 Entering Freshmen's 8th Grade CST Mean Scores and Performance Levels by Group Status, 2006-07

				Attended GDL Feeder Middle Schools								
	All freshmen @ GDL			Freshmen @ GDL			Freshmen @ comparison high schools			Freshmen @ other LAUSD high schools		
Test taken	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic
ELA	201	289	35	174	287	31	1523	288	36	353	319	60
Math: Algebra 1	104	275	18	90	273	17	926	264	11	263	291	35
Math: General	97	274	20	84	274	20	590	277	22	79	280	28

Table D5

Cohort 2 Entering Freshmen's 8th Grade CST Mean Scores and Performance Levels by Group Status, 2007-08

				Attended GDL feeder middle schools								
	All freshmen @ GDL			Freshmen @ GDL			Freshmen @ comparison high schools			Freshmen @ other LAUSD high schools		
Test taken	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic
ELA	639	293	39	582	293	40	1476	291	40	317	319	64
Math: Algebra 1	284	282	30	270	282	30	1081	268	19	259	291	36
Math: General	355	273	20	312	274	21	389	273	21	47	275	21

Table D6

Cohort 3 Entering Freshmen's 8th Grade CST Mean Scores and Performance Levels by Group Status, 2008-09

				Attended GDL feeder middle schools								
	All freshmen @ GDL			Freshmen @ GDL			Freshmen @ comparison high schools			Freshmen @ other LAUSD high schools		
Test taken	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic	No. tested	Mean score	% adv-prof-basic
ELA	562	293	39	495	293	39	1364	295	42	305	323	64
Math: Algebra 1	318	285	28	278	286	28	765	278	24	236	293	37
Math: General	243	276	20	216	275	19	591	280	25	62	286	27